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UNIVERSITY OF TORONTO

President's Report

FOR THE YEAR ENDING
30TH JUNE, 1940

FEB 19 1941

PRESIDENT'S REPORT

1939-1940

To the Governors of the University of Toronto:

GENTLEMEN:

I have the honour to present herewith my report on the academic work of the University and University College for the twelve months ending on the 30th June, 1940:

INTRODUCTION

Shortly before the autumn term opened war had been declared; under the shadow of this grim fact the whole year's work was carried on. After consultation with the military authorities, we urged the students to complete their courses as thoroughly and speedily as possible. Especially in the case of students in the professional faculties, such as medicine, engineering and dentistry, and in the various departments of science, was this advice applicable. The well trained man would be of greater value to the cause, both in industry and in direct war service. Meanwhile I advised all senior men, who were physically fit, to join the Officers Training Corps, and seek to gain the officer's certificate. About 500 graduates and 1200 undergraduates responded to this appeal; although through medical examination and further testing the corps was reduced to about 1200. Some took the one year course, others the two year course; and a large number of those who had obtained certificates have subsequently been called on to act as instructors in training camps. The time spent in drill and in lectures made inroads on the time normally spent in study and in recreation, but this time was cheerfully given.

A spirit of seriousness and determination has pervaded the whole university. The social events of the year and even the recreations were marked by simplicity and inexpensiveness. Some customary boisterous pranks of years gone by were discontinued as unseemly in such a time as this.

Research work, both in pure science and in the application of science to war and its problems, has been pursued with untiring energy. In the Motherland war conditions have necessarily interfered with scientific research; all the more reason therefore must our Canadian universities carry on a full programme of teaching and research. In medicine, dentistry, engineering, and in the departments of physics, chemistry and psychology,—to take only some examples—special war problems have been dealt with, and members of the staff have cheerfully worked on without holiday to reach their solution, or apply scientific principles to concrete military needs. Special investigations in health and in physical capacity have emerged in connection with aerial navigation.

Many members of the university, from the ranks of the staff, the graduates and the undergraduates have already enlisted in the Active Service Force. When the summer vacation came over 1000 had enrolled. About sixty members of the staff—chiefly from the faculty of medicine—had gone on full-time military duty. The Officer Commanding Hospital No. 15, Colonel Rae, is from the department of oto-laryngology.

Courses of lectures have been given by members of the teaching staff on the

origin, issues, and problems of the war. This university has sought through its technical courses to train men to be of greatest service in war and in industry; to develop essential leaders in the sciences; and to inform and guide public opinion.

I feel that staff and students alike have worked together to make this academic year one of real achievement and national service.

ATTENDANCE

The total number of students enrolled was 7,811, of whom 5,048 were men and 2,763 women; 7,161 being registered in the colleges and faculties, and 675 in the departments. The number of students proceeding to degrees was 6,295 and to diplomas 959. Of the students in attendance 3,786 came from Toronto, and 3,161 from other parts of the Province of Ontario. Every county is represented. There has been a decrease in registration of 149.

There is a small decrease in the registration. This is not to be wondered at. The financial uncertainties of the situation and the prompt enlistment of eager youths naturally reduced the number of male students. I look forward to further decreases as the war goes on. Young men from the secondary schools and from the universities will assuredly enter the Air Force, both because Canadian youths seem to "take to the air" by their very constitution and because they realise that victory can be won only by superiority in the air. When Britain dominates the air, the beginning of the end has come. Air Force and Sea Force will work together for the suppression of tyranny.

THE STAFF

The total staff of the University and University College numbered 958, of whom 127 were professors, 82 associate professors, 90 assistant professors, 219 lecturers, associates (in medicine and dentistry) and instructors in the Ontario College of Education, 1 director, 1 assistant director, 438 demonstrators, fellows, and instructors with sessional appointments.

In the federated colleges there were 79.

The total number in the complete staff is 1037.

During the year we have suffered the loss of members of the staff in the past and present. The list is as follows:

F. E. Coombs, M.A., professor of methods in elementary subjects, Ontario College of Education; J. G. FitzGerald, M.D. (Tor.), LL.D. (Queen's), director of School of Hygiene and Connaught Laboratories; J. T. Fotheringham, B.A., M.B., M.D., C.M., LL.D. (Queen's), professor emeritus history of medicine; Miss E. H. Gordon, M.B. (Tor.), Dr. P.H. (Penn.), medical adviser for women students; Maurice Hutton, M.A. (Ox.), LL.D., professor emeritus of Greek, and former principal of University College; G. M. Jones, B.A., professor of methods in English and history, Ontario College of Education; A. H. W. Caulfeild, M.B., senior demonstrator in medicine and research member of the Connaught Laboratories.

From our active staff the inevitable visitations of death have removed some useful and interesting members:

On Dec. 16, 1939, Frederick Ethbert Coombs, professor of elementary methods in the Faculty of Education, was suddenly called away. He had lectured in the morning to his postgraduate students, and died in the early evening of that day. In 1910 he headed the junior division of the University Schools, but later on devoted all his time to directing the public school course, to editing manuals and texts, and to lecturing in pedagogy. He faithfully taught that ease and achievement were incompatible.

On Dec. 17, 1939, Dr. Edith Gordon, for nineteen years medical adviser for women, passed away. She was the first woman physician in Canada to obtain

the degree of Doctor of Public Health; this she won in 1920 from the University of Pennsylvania. She was keenly interested in the religious and financial needs of the women students, as well as in their physical welfare; and constantly urged the need of a woman's building, where full provision could be made for their physical education. She left by her will about fifty books on medical subjects and on physical education to be placed ultimately in such a building.

On Jan. 5, 1940, George Mallory Jones, since 1929 professor of methods in English and history in the Faculty of Education, died on his way to the College. Through his editorship of the educational magazine, "The School" he exerted a wide influence on the teachers of the Province, and was of special help in the introduction of new courses of study.

On March 29th, died Dr. Paul Krotkov, the herbarium assistant in the department of botany since 1928. A graduate of the University of Moscow and a university teacher in Russia, he had to flee from his native land because of the Red Regime. He was a member of the old aristocracy, and a fine botanical scholar, especially in the field of surveys.

Dr. Alfred Hans Waring Caulfeild died on May 3, 1940. He was an internationally known authority on chest ailments and allergies. He graduated from this university in 1904 and served in the last great war. He was a senior demonstrator in medicine and a research member of the Connaught Laboratories. He was the author of many weighty works in his chosen field.

On June 20, 1940, passed away one of the outstanding figures in the medical history of our university and among the world leaders in the sphere of hygiene and preventive medicine, John Gerald FitzGerald. One of our own graduates in 1903, who studied and taught both here and abroad, he won eminence in the fields of pathology, bacteriology, neurology, psychiatry and above all in the department of hygiene and preventive medicine. His name will always be associated in this university with the founding of the Connaught Laboratories and the School of Hygiene, of which he was the director from the beginning. For many years he was a member of the Health Committee of the League of Nations at Geneva, and of the International Health Board of the Rockefeller Foundation. Under the auspices of this Foundation he travelled to India, and in a later year, 1936, he visited the various departments of preventive medicine in the United States and Europe, in order to make a report on the improvement of the curricula of preventive medicine. As professor of hygiene and preventive medicine in this university, and as Dean of the Faculty of Medicine from 1932 to 1936, he left a deep impress on medical education in Canada and developed the whole preventive side of medicine. Death came to him at the comparatively early age of 58. He was a great teacher, a research worker himself, and one who stimulated the research instinct in others, and an efficient organiser. His visible monuments will always remain in the School of Hygiene and the Connaught Laboratories.

To this list of honoured colleagues whose unexpected passing we deeply regret, I add the names of former members of our staff who have died during the past year:

One of the most notable teachers in this university throughout its long history was Maurice Hutton, who was freed from pain and weakness by his death on April 5, 1940. He had retired from his chair of Greek and the principalship of University College in 1928. Sixty years ago, in 1880, he came to Canada from Oxford to succeed in the chair of classical literature President McCaul, appointed in 1842. Dr. McCaul and Principal Hutton (who became his son-in-law) directed the classical studies of this university for 86 years.

In 1901, when the principalship of University College was separated from the presidency of the University, Dr. Hutton became Principal of University College, and as Principal Hutton he was known throughout the Dominion for the rest of his life. He was an impressive personality, an apostle of the human-

ities, an inspiring teacher, who linked the literature, history and philosophy of Greece to the eternal verities of life and to the problems of the day. His lectures throughout the Province brought a knowledge of ancient speculation, art and science to a wide public. Many thought him reactionary in his educational ideals, but he was always courteous, sometimes whimsical, always witty in the presentation of his views, and he always sought to give highest place to those spiritual values which a materialistic age was in danger of despising. It has been well said of him that "no graduate of this university ever touched the imagination of the alumni as did this Englishman". As one of his old students, I gladly offer my tribute of gratitude and respect to the memory of this great scholar and true gentleman.

Dr. John Taylor Fotheringham, former professor of the history of medicine, died on the 19th May, 1940. An old teacher in our schools, he proved an admirable lecturer in the Faculty of Medicine.

He had a distinguished career during the last world war, and on his return to Canada was for a time the Director of Army Medical Services, as a Major-General. Later he returned to the teaching staff of the university. A man of commanding presence, a strict disciplinarian, an excellent teacher, a convinced and ardent upholder of British ideals and institutions, he wielded a wide and helpful influence on successive generations of students. After his retirement he remained a member of the Senate of the university, and gave the fruits of his long experience to the service of his Alma Mater.

The following resigned their positions:

G. Lyman Duff, M.A., M.D., Ph.D., assistant professor, department of pathology and bacteriology; appointed lecturer July 1, 1935.

A. E. Grauer, B.A. (B.C.) (Ox.), Ph.D. (Cal.), director and professor, department of social science; appointed July 1, 1931.

Professor G. L. Duff, assistant professor of pathology, a very able and promising teacher and research worker, has gone to Montreal to be head of the department of pathology in McGill University.

Professor A. E. Grauer, the director of the department of social science, was appointed secretary of the Electrical Corporation of British Columbia. He had done excellent work in building up and organising our Social Science department and had made valuable connections between it and the various social welfare organisations of Toronto.

The appointment of members of our staff to other institutions is a recognition of the excellence of our teaching personnel and forges new links of good will between the various universities concerned.

Leave of absence was granted to:

For the session: E. G. R. Ardagh, B.A.Sc., professor of applied chemistry; J. G. FitzGerald, M.D. (Tor.), LL.D. (Queen's), director of School of Hygiene and Connaught Laboratories.

For the Michaelmas Term: F. H. Anderson, B.A. (Dal.), M.A., Ph.D., professor of philosophy; Miss Edith H. Gordon, M.B. (Tor.), Dr. P.H. (Penn.), medical adviser for women students.

For the Easter Term: Ross Taylor, B.A.Sc., associate professor of mechanical engineering.

The following new appointments and promotions were made during the year:

In the Faculty of Arts:—Appointments: Ivan Wright, A.M., Ph.D. (Mich. State), visiting professor, department of political economy.

Promotions: W. H. Martin, M.A., Ph.D., from an associate-professorship to a professorship in chemistry; J. R. Dymond, M.A., from an associate-professorship to a professorship in biology; H. R. Kemp, M.A., from an associate-professorship to a professorship in political economy; G. F. Wright, B.Sc., Ph.D. (Iowa), from

an assistant-professorship to an associate-professorship in chemistry; W. J. K. Harkness, M.A., from an assistant-professorship to an associate-professorship in biology; D. G. Creighton, B.A. (Tor.), M.A. (Ox.) from an assistant-professorship to an associate-professorship in history; L. T. Morgan, B.A. (B.C.), M.A., Ph.D. (Cal.), from an assistant-professorship to an associate-professorship in political economy; J. Finkelman, M.A., LL.B., from an assistant-professorship to an associate-professorship in law; L. Infeld, Ph.D. (Cracow), from a lectureship to an assistant-professorship in applied mathematics; F. P. Ide, M.A., Ph.D., from a lectureship to an assistant-professorship in biology; W. S. McCullough, M.A., from a lectureship to an assistant-professorship in Semitics; V. J. Okulitch, M.A.Sc. (B.C.), Ph.D. (McGill), lecturer in geology; F. E. J. Fry, M.A., Ph.D., lecturer in biology; A. J. V. Lehmann, M.Sc. (Alberta), lecturer in botany; G. Tatham, M.A. (Liverpool), Ph.D. (Clark), lecturer in geography; D. F. Putnam, B.S.A., Ph.D., lecturer in geography.

In the Faculty of Medicine:—Appointments: D. E. O. Magner, M.D., B.Sc. (Med.), lecturer in pathology and bacteriology; Miss H. C. Plummer, B.A. (Mt. A.), M.A. (Col.), Ph.D., lecturer in hygiene and preventive medicine; L. Young, B.Sc., Ph.D. (London), associate-professor in biochemistry.

Promotions: A. M. Wynne, M.A. (Qu.), Ph.D., from an associate-professorship to a professorship in biochemistry; D. Y. Solandt, M.A., M.D., Ph.D. (London), from an assistant-professorship to an associate-professorship in physiology; E. W. McHenry, M.A., Ph.D., from an assistant-professorship to an associate-professorship in physiological hygiene; D. L. McLean, M.B., B.Sc. (Med.), D.P.H., from an assistant-professorship to an associate-professorship in physiological hygiene; A. C. Singleton, M.D., from an associateship to an assistant-professorship in radiology.

In the Faculty of Applied Science:—Appointments: D. N. Cass-Beggs, B.Sc. (Manchester), lecturer in electrical engineering; W. T. Turrall, M.A.Sc., lecturer in mining engineering.

Promotions: R. R. McLaughlin, M.A.Sc., M.A., Ph.D. from an assistant-professorship to an associate-professorship in chemical engineering; E. A. Smith, M.A. (McM.), from an assistant-professorship to an associate-professorship in chemical engineering; G. R. Lord, B.A.Sc. (Tor.), S.M. (M.I.T.), Ph.D., from a lectureship to an assistant-professorship in mechanical engineering.

In the Faculty of Household Science:—Appointment: Miss J. I. Simpson, B.A. (Tor.), S.M., Ph.D. (Chicago), lecturer in household science.

In the Department of Social Science:—Appointment: S. K. Jaffary, M.A. (Alberta), Ph.D. (Chicago), associate professor.

In the Department of Health Service for Women:—Appointment: Miss J. F. Davey, B.A., M.D., medical adviser for women students.

Honours were conferred upon members of the staff:

Professor C. A. Ashley, associate professor of accounting, was elected Secretary-Treasurer of the Canadian Political Science Association; Professor C. H. Best, professor of physiology was awarded the Charles Mickle Fellowship, which is given annually to that member of the medical profession who is considered to have done most during the preceding ten years to advance sound knowledge of a practical kind in medical art or science; Professor E. K. Brown, of the department of English, University College, held the F. I. Carpenter chair of English literature at the University of Chicago during the summer of 1940; Professor Duncan Graham, head of the department of medicine, has been appointed consultant to the Royal Canadian Army Medical Corps and is the incoming President of the Canadian Medical Association; Professor T. J. Meek was appointed a member of the Committee on Near Eastern Studies of the American Council of Learned Societies; Professor R. R. Graham, of the department of surgery, has been elected President of the Inter-state postgraduate medical association; Professor E. F. Burton of the department of physics is a

Director of Research Enterprises Limited, a company wholly owned by the Government for making glass and fire-control instruments; Dean W. E. Gallie, head of the department of surgery, has been elected President of the American Academy of Surgery; Professor Alan Brown, professor of paediatrics, has been awarded a Fellowship of the Royal College of Physicians of London, England; Dr. D. E. Robertson, assistant professor of surgery, has been elected President of the American Orthopaedic Association; Dr. E. S. Ryerson, assistant dean of medicine, has been elected Vice-President of the Medical Council of Canada.

THE UNIVERSITY IN GENERAL

The details of departmental work are found in the reports appended. These give an idea of the extent and variety of the activities of the University. I need mention only some outstanding features or add some supplementary information.

Curricula from time to time require revision. The curriculum in medicine has been under review for several years; the general results of the survey have been a curtailment of the number of lectures and further opportunities for clinical work. The curriculum in engineering is now in process of revision. In the faculty of arts a strong committee has been appointed to examine both the contents of the various courses and the methods of instruction; the possibilities of over-lapping; the advisability of simplifying or consolidating undergraduate honour courses; the improvement of the pass course; and similar academic problems.

Discussions continue in the faculty of arts about matriculation requirements in relation to the Junior and Senior Leaving examinations prescribed by the Department of Education. Latin has become an optional subject. Our Arts Council at present favours in the Junior matriculation compulsory mathematics and at least two foreign languages. Other Faculty Councils favour the acceptance of the Department of Education Junior Leaving certificate, while they prescribe definite subjects for honour matriculation into their respective faculties.

The requirement that students in medicine must pass their first year examination completely in the first year before being allowed to continue in medicine has raised the general standard of first year work, and directed to other courses in the university those who in medicine would be "repeaters" and probably failures in later years.

On February 14th a service was held in Convocation Hall in memory of our late Governor-General, Lord Tweedsmuir, who was one of our honorary graduates, and whose interest in higher education was profound and stimulating.

On account of the expense involved, it has been decided to hold no elections for the University Senate before September 1st, 1942.

The wives of members of the staff and some of the women undergraduates early formed a War Service organisation. Work on materials supplied by the Red Cross and by private subscriptions has been carried on by various groups in rooms situated in the Household Science Building. Under a sub-committee of this general organisation a fine service has been rendered to British Overseas children. 147 children of teachers in British Universities have been placed in the homes of members of our own staff or their friends; 22 mothers with young children have been placed in homes or apartments.

In the department of physics, under the direction of Professor Burton, twenty graduates in physics from various universities (although mainly from Toronto) received a short intensive course in advanced work in radio, and entered the Canadian Navy, and through it were loaned to the British Navy. Later, another group, eleven in number, mainly our own graduates, were similarly instructed and sent on to Halifax and England. The expenses in connection with the training of this second class were borne by the Riverdale Kiwanis Club.

I draw special attention to that part of Professor Burton's report on research, which describes the building of an electron-microscope, which can magnify from

30,000 times and upwards. Many new fields of investigation are thus opened through the use of this instrument, particularly in connection with viruses. Collaboration with the medical departments is in progress.

During the absence, on government business, of Professors Kemp and Coe of the department of economics we were fortunate enough to secure for one year the services of Professor Ivan Wright of the University of Illinois. His wide experience in connection with the reorganisation of Stock Exchanges has been of great value to our students of commerce and finance.

A group of educationalists from Atlanta, Georgia, thirteen in number, with Dr. A. R. Mann of the Rockefeller Foundation, visited our University in October to look into the working of the system of university federation. Several degree-conferring institutions in and near Atlanta were considering the possibilities of combining resources and forces. In November, I attended, on invitation, the Conference of Southern Universities held in Atlanta and described the practical working of our university organisation.

The American Hospital Association, during its session in Toronto, planted a maple tree to the East of University College in memory of Matthew Foley, the founder of Hospital Day in the United States. Earth from the various Provinces of Canada and States of the American Union was cast with the excavation for the tree.

We record with deep regret the death of Mr. Thomas E. McDonnell, a member of our Board of Governors. He was regular in attendance and a wise financial adviser. He was one of the Board's representatives on the Board of the Toronto Conservatory of Music.

The John S. Guggenheim Foundation recently announced the establishment of six fellowships open to residents of Canada and Newfoundland, of the value of $2500 each, to enable them to go to the United States and continue research and creative work in their own fields. I am glad to state that one of these fellowships was awarded to Mr. D. G. Creighton, associate professor of history in our university, probably on account of his recent remarkable book, "The Commercial Empire of the St. Lawrence". He will be on leave of absence next year; in his place as a special lecturer we hope to have the world famous authority in mediaeval history, Dr. G. G. Coulton of St. John's College, Cambridge, England.

FACULTY OF ARTS

William Lowell Putnam Competition

Once more the team of three men from this university—J. R. Crosby, J. C. Maynard and G. H. K. Strathy (since killed in action on H.M.S. *Ajax* in the Mediterranean Sea) won the prize in the William Lowell Putnam competition, sponsored by the Mathematical Society of America. This prize of $500 goes to the institution whose team scores highest in the examination and is open to all colleges and universities in the United States and Canada. About sixty colleges competed.

In 1937 the prize was first won for this university by Irving Kaplansky (now at Harvard), A. John Coleman (now Student Christian Movement secretary in the University of Toronto) and N. S. Mendelssohn (now fellow in mathematics in our department).

We entered no team in 1938 because by the regulations the winning university sets the papers in the next examination. The winning of these famous distinctions reflects the greatest credit both on the instructors and the students in the department of mathematics. With the money thus won it has been decided to establish a special mathematical library, consisting of new mathematical books, and books of reference, which will be placed in the East Hall of University College and will be open to all mathematical students in the university.

FACULTY OF MEDICINE

The School of Hygiene

Through the joint action of the Rockefeller Foundation and the Provincial Department of Health, it has become possible to make the preliminary studies into the practicability of establishing a Field training-centre in connection with the School of Hygiene and the School of Nursing. To the staff have been appointed additional members in physiological hygiene and in epidemiology and biometrics. Special courses have been instituted for the further training of part-time public health officers.

FACULTY OF APPLIED SCIENCE AND ENGINEERING

The curve of attendance continues to rise. The numbers in the different departments vary considerably, but in chemical engineering there seems a steady growth.

The most notable feature of the year has been the survey made by Dr. Dugald C. Jackson, professor emeritus of electrical engineering in the Massachusetts Institute of Technology, and an outstanding American consulting engineer. His report is being carefully studied by the Board of Governors, the staff, and the graduates. He regards the curriculum as overcrowded and involving so much lecturing and laboratory work that there is not enough time available to teacher and student for study, reflection and experiment. He points out the need for more accommodation, particularly in chemical and mechanical engineering. He urges further training in English and economics. He recommends closer contacts with outside industry and with the alumni by a system of advisory councils.

A special committee of the staff are already dealing with the revision of the curriculum, both on the lines of Dr. Jackson's recommendations and on the basis of information gathered by visits of staff members to the best engineering schools on the continent.

The Dean has already informed me that he proposes to retire at the end of the next year. To choose the right successor will be no easy task.

The Engineering Alumni have established medals for achievement, to be presented to engineers who have done useful and valuable work, which yet may have received no public recognition. The first presentation has taken place, and one of the medals has been awarded to Professor C. R. Young, head of our department of civil engineering.

LIBRARY SCHOOL

There has been an exceptionally large enrolment this year—65. For the diploma course the applicant must have had at least one year's practical experience in an approved library, and must have obtained a leave of absence from the Library Board of a municipality. These conditions secure the combination of theory and practice that the course presupposes, and keep before the student the aim of the course—to provide well qualified directors and promoters of the educational values of a public library.

FACULTY OF FORESTRY

Negotiations have been entered into looking to the purchase of a suitable university forest area for the practical field work of the students. We shall probably be able to acquire within reasonable distance from Toronto a tract of forest land containing over 3,000 acres. This will mark a real step in advance.

Dean Howe also makes a helpful recommendation that for undergraduates there should be offered a course of lectures on the character, extent, and conservation of the natural resources of Canada. Young Canadians certainly should have definite knowledge of our material wealth and some inspiration to use and develop that wealth wisely and for worthy ends.

UNIVERSITY EXTENSION AND PUBLICITY

Extension work has become one of the most active and helpful features of modern university life. Under the resourceful and vigorous leadership of Mr. W. J. Dunlop this department has grown exceedingly. Although evening classes were inevitably affected by the war, the total number of students actually enrolled in continuous courses and classes was 5,190. In the Teachers' Course, leading to the degree of B.A., 622 have taken the instruction prescribed.

Among the most attractive of the new courses are those in business. Three of these have been given, in marketing, foreign exchange and investments. 507 business men attended. The success of these has led to the establishment of a certificate course in business, including accounting, economics, and mercantile law. It may be, as Mr. Dunlop suggests, that we have here the basis of a School of Business Administration, such as Harvard University possesses in all its full-blown development.

The first group of students in aerial navigation have this year received their diplomas. They have been immediately in demand and are now being used either in civil aviation or as instructors in the aviation training centres.

The war and its requirements hereafter have led to a large increase in the number of students in occupational and physical therapy. Our facilities of instruction are taxed to the utmost.

Courses are being provided for soldiers in training.

This whole field of university extension is linked with the growing demand for adult education and is one sure method of meeting it. As education is a process it should not cease when one leaves school or college. As we live under a democratic form of government, intelligence is essential if this system is to work satisfactorily.

DEPARTMENT OF SOCIAL SCIENCE

It was difficult at short notice to find a successor to the former director, Dr. Grauer. Finally, we secured as an associate professor a Canadian by birth and education, who has had a wide experience also in the United States, Dr. Stuart Jaffary—son of the former librarian of Parliament in Edmonton. He has had a teaching post for some years in the Tulane University of Louisiana. He has already proved himself an excellent teacher and is rapidly making contacts with the various social agencies of this city and province. There are few schools in Canada for the training of social workers; our school should give a lead. Trained welfare workers will be increasingly in demand in post-war days; and the social sciences will claim a place for study and research side by side with the physical sciences.

Miss Agnes MacGregor with her long record of faithful and efficient work on our staff is Acting Director of this Department.

We regret that, owing to ill health, the former director, Professor E. J. Urwick has had to remove to Victoria, B.C. His courses of lectures will be greatly missed.

THE SCHOOL OF NURSING

The generous endowment provided for this School of Public Health Nursing by the Rockefeller Foundation has given it stability, security and the basis for further development. Its accommodation is already insufficient for its growth.

Miss Russell has pointed out that this year there has been an increased demand on the part of advanced students for special postgraduate work. The School is able to avail itself of the varied and valuable resources, human and material, of the whole university.

HEALTH SERVICE AND ATHLETICS

Dr. Porter, Director of the Men's Health Service, reports that this year 2519 men have been examined—the largest number on our records—and that

out of these only 18 were found unfit for physical training. In the first year there were 155 students six feet and over in height and with average weight of $160\frac{3}{4}$ pounds.

Dr. J. A. McGeachy, one of our own graduates, has been appointed to assist Dr. Jean Davey in the medical examination of women.

Mr. Reed of the Athletic Directorate reports that 54% of the male students eligible for exercise participated in some form of athletic activity.

A new course leading to the degree of Bachelor of Health and Physical Education has been established by the Senate. It is under the direction of Dr. Stanley Ryerson, the assistant dean of medicine. It will provide well qualified teachers, men and women, to take charge of this branch of instruction in the secondary schools of the Province; and will give to any student a valuable training in the knowledge and practice of the fundamental principles of good health. The old Latin motto: *Mens sana in corpore sano*, is in the light of modern science eminently true.

We congratulate our senior hockey team for winning after seven years the Canadian and the International inter-collegiate championship, under the captaincy of Mr. John Maynard, fine athlete and great mathematician.

CHINESE STUDIES

In the Royal Ontario Museum the magnificent collection of Chinese objects of art, dating from 1700 B.C. and the famous Mu Library of 50,000 volumes have already marked out this university as a chief seat of Chinese studies on this continent. In the person of Bishop W. C. White, the Keeper of the East Asiatic Collection and associate professor of Chinese archaeology, we have one of the most distinguished authorities on the art and archaeology of China. We expect to have next year about twenty students, graduates of Chinese universities, in attendance at Toronto on the scholarships founded by Great Britain out of the Boxer indemnity. These local facilities and conditions make it timely to consider the advisability of a further advance by the creation of a separate department and professor of Chinese in the university. I believe that such a gesture would be greatly appreciated by the gallant Republic of China and would bring about further good relations between Canada and China, in the fields of culture and commerce. It could be done with little or no additional expense to the university. Such chairs are to be found in Oxford, Cambridge and London.

PHARMACY

The representatives of the College of Pharmacy held several conferences with us on terms and fees of a new agreement with the University for the teaching of their students in certain university departments. In view of the uncertainty of the number of students involved—on account of the war—it was finally decided to continue the existing arrangement for the next two years. The College of Pharmacy pays the University a lump sum of $15,000 a year.

A PONTIFICAL INSTITUTE

For many years St. Michael's College has organised and conducted an Institute of Mediaeval Studies. To its more adequate housing in a new building and to the equipment of its distinctive library, the late Senator Frank P. O'Connor made generous contributions. The Carnegie Corporation also gave substantial aid. On its staff have been two scholars of world-fame: Professor Etienne Gilson and Professor Jacques Maritain, who have shared their time between Paris and Toronto. Well trained Canadian scholars, like Father Gerald Phelan and Father McLaughlin (now Superior of St. Michael's) have conducted most of the teaching. Graduate students are coming from all parts of this continent. During this year the value of the work of the Institute has been signally recognised by the Vatican, which has granted it the rank of a Pontifical Institute, empowered to confer

degrees in theology. We may infer that this act is also an evidence of the satisfaction of the highest ecclesiastical authorities with the system of federation in higher education, as carried out between this University and St. Michael's College.

SCHOLARSHIPS

As the cost of higher education has increased, so is the need of scholarship and loan funds made more urgent. Perhaps only those who are immediately connected with the administration of college and university realise the value of such funds. If educational opportunities are to be equalised between the city and the country, between the well-to-do and those of meagre resources, additional and substantial aid must be available for students rich in brains though poor in purse. I am glad to report the gifts of several new prizes and scholarships; I would appeal for more. Such beneficence would be "bread cast upon the waters" and would be found again in the lives enriched and made more serviceable. What better memorial could be established than a fellowship or scholarship which would render a fructifying service through all the years?

BUILDINGS

The war has naturally restricted building activities. It has been deemed wise to postpone the additions to the residence of the late Sir Joseph Flavelle—gymnasia and swimming pool—which would have made it a centre of physical training and recreation for the women undergraduates, in accordance with the wishes of the donor. The facilities now available for this purpose are sadly inadequate. The director of medical services for women in the university has in her report once more pointed out this difficulty in the way of giving proper health education and athletic opportunities to our young women.

The erection of the men's residence for University College, however needed, must await the victorious conclusion of the war. Meanwhile the provision of adequate playing grounds for the undergraduates of the State College in our federation system is receiving the careful consideration of the Board. At the moment all available space must be at the disposal of the military authorities.

We congratulate Trinity College on being able to proceed with the erection of its residences and dining-hall, made possible through private benefaction.

An addition has been made by the Connaught Laboratories to the Hygiene Building to provide absolutely necessary accommodation for the manufacture of insulin. In much of Europe the supply of insulin is decreasing so rapidly that recourse must be had to laboratories like our own.

Through the generosity of Dr. Sigmund Samuel a gallery has been erected in the Royal Ontario Museum to house his collection of valuable historical prints and pictures, which illustrate the early history of Canada. To his former benefactions to the Museum in the form of the Chinese gallery and the priceless Chinese library, he has added this further proof of his interest and foresight.

It was very fortunate that just before war was declared, we had purchased No. 119 St. George Street to be the headquarters of the Officers Training Corps. From Corps funds a commodious drill hall was erected at the rear of the building. Now every part of the building is occupied and a further addition may be necessary.

For the Canadian Medical Association we have provided more space in the building on College Street, now occupied by them. This was needed on account of the medical register to be prepared in connection with war service.

THE ALUMNI FEDERATION

The Alumni Federation consists of fifteen constituent associations and thirty local clubs. It was chartered in the Province of Ontario following the last war, when graduates of the University decided that they would erect a suitable memorial to the memory of the alumni and former students who had given their

lives in the service of their country. As a result of this effort the Memorial Tower was erected and the carillon installed. The funds remaining were used to assist returned soldiers in the University in the form of scholarships and loans. This phase of the work of the Federation has grown throughout the years until now scholarships and fellowships of the value of five thousand dollars are awarded annually and six loan funds are operated for the assistance of needy and deserving students. Since 1923 more than $65,000 has been awarded in scholarships and more than $260,000 loaned to students.

The publication of the *University of Toronto Monthly* is another important undertaking of the Federation. News of the University, the faculty and the alumni is published each month, enabling graduates to keep in touch with their alma mater and their classmates.

One of the principal duties of the Federation is the co-ordination of the activities of the various alumni bodies in the interests of the University. At the present time the Federation is preparing to co-operate with the University in the undertaking of necessary war work.

Fees of members, a grant from the University and advertising in the *Monthly* provide the largest part of its revenue.

VISITING LECTURERS

During the year the following special lectures were delivered:

A lecture on "Supersonics" by Professor Herbert Freundlich of the University of Minnesota; a lecture on "Pan-Germanism and Mittel-Europa" by Professor M. J. Bonn, formerly Rektor of the Handels-Hochschule in Berlin and lecturer at the London School of Economics; a lecture on "The Nature and Value of the Humanities" by Professor T. M. Greene, Princeton University; a lecture on "The value of archaeology for understanding the Archaic Age in Greece" by Professor Martin P. Nilsson, Lund University, Sweden; on the Donald C. Balfour Lectureship in Surgery, a lecture on "Transplantation of the Ureters" by Professor G. Grey Turner, University of London; a lecture to the Law Club by Professor H. E. Yntema, University of Michigan; a lecture on "Engineering Geology Features on the West Coast" by Professor H. Ries, Cornell University; lectures on "Physiological Problems in the Present War", by Dr. A. V. Hill, Fullerton Research Professor and Secretary of the Royal Society, England.

A series of public lectures was arranged by University College: on "The Historical Background of the War" by Professor R. Flenley; on "The Immediate Causes of the War" by Professor B. Wilkinson; on "Democracy as a Way of Life" by Principal Malcolm W. Wallace; on "The British Commonwealth at War" by Colonel George Drew; on "The Position of the United States" by Professor J. B. Brebner of Columbia University; on "Things that make a War worth fighting" by Mr. B. K. Sandwell.

In celebration of the twenty-fifth anniversary of the founding of the Department of Social Science the following series was arranged: on "The Contribution of Social Science to Social Work" by Professor R. M. MacIver, Columbia University; on "Social Action or Inaction" by Miss Helen Hall, Henry Street Settlement, New York; on "Social Philosophy and Social Work" by Professor E. J. Urwick; on "Group Work as an Instrument of Democracy" by Miss Marion Hathway, American Association of Schools of Social Work, Pittsburgh.

A series of lectures was arranged under the auspices of the course in Sociology in the Department of Political Economy: on "Physics and Society" by Mr. R. E. Park, University of Chicago; on "The role of inference in the Social Sciences" by Mr. S. D. Clark; on "Sociological Aspects of the Problem of Motivation in economic activities" by Mr. Talcott Parsons of Harvard University; on "Obstacles to a scientific sociology" by Mr. C. W. M. Hart; on "Sociology as one of the specialised Social Sciences" by Mr. C. A. Dawson, McGill University.

A series of lectures in "Marketing" was arranged by the Department of Political Economy and the Department of University Extension in co-operation

with the Advertising and Sales Club of Toronto: on "Canada's Agricultural Exports in War Time" by Mr. J. S. McLean, President of Canada Packers Limited; on "Modern Retail Distribution" by Mr. Orval D. Vaughan, a Director of the T. Eaton Company; on "Market Research—An Adjunct to Selling" by Mr. Elmer P. Resseguie, Scripps-Howard Newspapers, New York; on "Distribution Cost Accounting" by Mr. Wilford L. White, Department of Commerce, Washington; on "Training for Marketing" by Mr. R. C. Borden of The Borden Company, New York; on "Some Aspects of Instalment Selling" by Mr. Ivan Wright, department of Economics, University of Illinois; on "Transportation Problems in Relation to Marketing" by Professor John L. McDougall, Queen's University; on "Marketing Research in the Field" by Mr. I. D. Carson, Canadian National Newspapers and Periodicals Association, Toronto; on "Public Relations and Marketing" by Mr. C. E. Macdonald, International Nickel Company of Canada; on "Psychology and Marketing" by Dr. K. S. Bernhardt, Department of Psychology, University of Toronto.

A series of ten lectures on "Investments" arranged by the Department of Political Economy and the Department of University Extension in co-operation with the Investment Dealers' Association of Canada: on "The Service of the Stock Exchange" by Mr. A. J. Trebilcock, Executive Manager of the Toronto Stock Exchange; on "Hedging against Inflation", by Professor Ivan Wright, Visiting Professor from the University of Illinois; on "The Work of the Trust Company for the Investor" by Mr. J. M. Macdonnell, General Manager, National Trust Company; on "Life Insurance as an Investment" by Mr. J. G. Parker, General Manager, Imperial Life Insurance Company; on "Investment of Life Assurance Company Funds" by Mr. V. R. Smith, General Manager, Confederation Life Association; on "The Economics and Financial Trends affecting Investments" by Mr. Charles M. Short, Assistant Secretary, Canadian Bank of Commerce; on "Analysing Investment Securities and Selecting Growth in Common Stocks" by Mr. J. Courtland Elliott, Statistician, Messrs. A. E. Ames and Company; on "Interpreting the Mining News from the Standpoint of the Investor and the Speculator" by Mr. Richard Pearce, President, "The Northern Miner"; on "Underwriting and Selling Investment Bonds in Canada" by Mr. W. P. Scott, President, Investment Dealers' Association; on "Interpreting Financial News", by Mr. Floyd S. Chalmers, Editor, "The Financial Post".

A course in Foreign Exchange offered by the Department of Political Economy and the Department of University Extension at the request of the Canadian Credit Men's Trust Association: on "Canada's international transactions, the balance of payments, special characteristics of the Canadian economy" by Professor J. F. Parkinson; on "Determination of the rate of exchange under an inconvertible currency system; stabilising factors" by Professor J. F. Parkinson; on "The Gold standard and the exchanges; evolution of the gold standard since 1925" by Professor A. F. W. Plumptre; on "The War and the Foreign Exchanges; the Foreign Exchange Control Board; reasons for its establishment" by Mr. A. McD. MacBain; on "Current practices and regulations of the Board respecting commercial transactions; exports and imports" by Mr. R. F. Bruce Taylor; on "Canada's international capital movements, interlisted securities, transfers of funds to and from branch plants, etc.; the stock and bond markets since inauguration of Exchange Control" by Mr. J. Courtland Elliott; on "Technique of financing foreign trade in Canada; bills of exchange, letters of credit" by Mr. A. K. Harvie; on "The actual working of the exchange market in normal times; spot and forward exchange, arbitrage transactions" by Mr. F. R. MacLean; on "The role of the Bank of Canada to-day, with special reference to foreign exchanges. Relations with Government and Chartered Banks and the bond market" by Professor A. F. W. Plumptre; on "Variations in Canada's international position since 1928; controversy over the appropriate exchange rate 1932-33; merits and demerits of depreciated exchange; repatriation of Canadian securities abroad since 1934 and its significance" by Professor J. F. Parkinson.

The following lectures were given in Convocation Hall under the auspices of the Royal Canadian Institute:

By Professor J. R. Dymond on "The study of Animal Life in Canada"; by Dr. Ralph Linton, Columbia University, on "How civilisations grow"; by Professor R. F. Legget, on "Building Downwards"; by Dr. R. B. Dow, Pennsylvania State College, on "Explorations with high pressure"; by Dr. A. E. Berry, Provincial Health Department, on "The Role and Accomplishments of modern Sanitation"; by Professor F. S. Hogg, on "Climates of other worlds"; by Dr. John D. Leitch, Eldorado Gold Mines, on "Romance of Canadian Radium"; by Dr. P. Nash, on "Archaeological Explorations in North America"; by Professor Harold Hibbert, McGill University, on "The Utilisation of farm and forest Products"; by Lieutenant Paul A. Smith, Hydrographic and Geodetic Survey, Washington, D.C., on "Exploring the Ocean Floor"; by Dr. R. K. Stratford, Imperial Oil Company, on "The Petroleum Industry Streamlined"; by Dr. W. E. Saunders, President of Federation of Ontario Naturalists, on "Seventy years a naturalist"; by Professor E. F. Burton on "The electron microscope"; by Dr. J. O. Perrine, American Telephone and Telegraph Company, on "Waves, Words and Wire"; by Dr. G. G. Simpson, American Museum of Natural History, New York, on "Naturalists in Venezuela"; by Dr. Herbert Freundlich, University of Minnesota, on "At the Limits of the Microscope and Beyond"; by Dr. G. S. Hume, Geological Survey, Ottawa, on "The search for petroleum in Canada"; by Mr. W. E. Phillips, Duplate Safety Glass Company of Canada, on "Glass comes of age".

CONFERENCE

A Seminar-Conference on Indian Affairs was held at the University of Toronto from September 4 to 16, under the auspices of Yale University and the University of Toronto, with the co-operation of the Carnegie Corporation of New York. Dr. C. T. Loram of Yale and Dr. T. F. McIlwraith of Toronto were joint chairmen. A number of representatives were sent by the Indian Affairs Branch of the Department of Mines and Resources of the Canadian Government and by the U.S. Indian Service. Other members of the conferences were Indian leaders, missionaries, anthropologists and representatives of Indian welfare organisations.

The Royal Meteorological Society and the American Meteorology Society met at the University in September.

BENEFACTIONS

During the year the University has received the following benefactions, totalling $445,581.57:

From the Rockefeller Foundation: Child Research, $5,322.61, Psychiatry, $20,800.00, School of Hygiene, $2,000, School of Nursing, $251,497.09; Dominion Government: Aerial Navigation, $15,000, Aviation Medical Research, $10,000, Aviation Psychology Research, $2,000, Bacteriology, $1,100, Canadian Council on Nutrition, $2,000, Chemistry, $1,000, Concentrated Serum, $1,600; Eaton Endowment, $25,000; Reuben Wells Leonard Bequest, $15,441.38; Carnegie Corporation: Fine Art, $5,500, Institute of Child Study, $5,500; Rt. Hon. Sir William Mulock, for U.C. Men's Residence Fund, $6,666.66; Joseph Errington, Esq. for geophysics, $6,426.79; Hans Lundberg Fund, geophysics, $6,117.53; Anonymous, for organic chemistry, $5,000; H. F. McLean grant, Medical Research Banting, for aviation, $5,000; Ontario Mining Association, for silicosis research, $5,000; Josiah Macy, Jr. Foundation, Medical Research Banting, for Neurogenic Research, $3,782.25; Reuben Wells Leonard Fellowship and Scholarship, $3,650.00; Geo. H. Locke, Memorial Scholarship, $3,000; Scottish Rite Donation, for dementia praecox research, $2,685.22; National Foundation for Infantile Paralysis, for paediatrics, $2,640; Kiwanis Club of Riverdale, for McLennan Laboratory Research Fund, $2500; Professor E. F. Burton, for

McLennan Laboratory Research Fund, $100; J. S. McLean Fellowship, for University College, $2,500; Canadian Red Cross Society, for concentrated serum, $2,500; Eli Lilly Fellowship, $2,189.75; Annie Lewisa Laird Prize, $2,000; Flavelle-Peacock Retiring Allowance: Estate of late Sir Joseph Flavelle, $750, Sir Edward Peacock, $750; Mrs. W. J. Hanna, for Social Science, $1,482.87; Sir Joseph Flavelle Fellowship, $1,250; Arthur Cohen Scholarship, $1,080; Allen-McKellar Memorial Prize, $1,025.34; D. A. Dunlap Memorial Scholarships, $1,000; Parke, Davis donation for research: $750; Wm. Lowell Putnam Mathematics Prize, $549.50; James W. Crocker Memorial Loan Fund, $500; Sadowski Scholarships, $500; John Northway Memorial Fellowship, $500; Imperial Oil Limited, for Graduate Fellowship, $500; S. R. Parsons Scholarship: Mrs. E. B. Hetherington, $250, Professor C. A. Ashley, $250; Gertrud Davis Exchange Fellowship, $500; University College Alumni Matriculation Scholarship, $475; Robert Simpson Company, scholarships, $450; Sir Edmund Walker Scholarship, $450; A. J. Saul English Poetry Prize, $450; School of Nursing undergraduate bursary fund, $400; Emerson Wickett Memorial Scholarship, $375; Robert Bruce Scholarships, $365.69; B'nai B'rith Scholarships, $350; Medical Society Bursary Fund, $300; Oral Health Magazine: Wallace Seccombe Prize, $150, Oral Health Thesis Prize, No. 1, $100, No. 2, $50; Archibald Gilchrist Fund, for botany, $300; Robert A. Bryce, Esq., for U.T.S. engineering scholarship, $250; James Branston Willmott scholarships, dentistry, $250; H. G. Fox Prizes, law, $250; Percy Hermant Scholarship, $250; Jule and Jay J. Allen Award, $250; Anonymous, Mary Keenan Award, $200; Boiler Inspection and Insurance Company, scholarship, $150; Pan-Hellenic Association of U. of T., prizes, $150; U.C. Alumni Association for Maurice Hutton Matriculation Scholarship Fund, $125; Sir John C. Eaton Memorial Scholarship, $120; University College Alumnae Scholarship, $100; Hon. Dr. H. J. Cody for University Women's Central Committee for War Services, $100; Darling and Pearson Prize, architecture, $100; Ann Laidlaw Donation, archaeology, $100; A. H. Simpson donation, chemistry, $100; U.T.S. Old Boys' Association Scholarships, $100; Herbert Willson Scholarship, $100; Sir Robert Falconer Lectureship, from University Press, $100; Delta Phi Epsilon Bursary, $100; University Tours Association Scholarship, $100; Association of Professional Engineers of Ontario Bursary, $100; George Kennedy Scholarship, $83.09; Sarah Kennedy Scholarship, $83.03; St. Margaret's College Alumnae Scholarship, $75; Toronto Brick Company Prize, architecture, $75; Alpha Chi Omega Fraternity Bursary, $70; F. W. Jarvis Bursaries, $50; Dr. R. A. Reeve Prize, $50; Toronto Women's League of United Synagogue Prize, $50; Hollywood Theatre Prizes in French, $50; Public Speaking Association Bursary, $50; Class of 1930, Mathematics and Physics Bursary, $50; Hon. Charles McCrea, Dent McCrea Scholarship, $50; Ramsay Wright Scholarship, $45.08; Lambda Chi Alpha Alumni Association of Toronto, for Saddington Medal, $30; Wallace Seccombe Memorial Scholarship Fund, $14.33; Albert E. Webster Memorial Scholarship Fund, $14.34; Hon. Dr. J. A. Faulkner, Faulkner Medal, $26.95; Ontario Medical Association Prize, Preventive Medicine, $25.00; American Society of Heating and Ventilating Engineers, $25; Labour Research Institute Prize, law, $25; Engineers' Institute of Canada Prize, $25; Pi Lambda Phi Fraternity Prize, $25; Romaine K. Ross Prize, $20; British Association for the Advancement of Science Fund, $19.13; Maurice Cody Memorial Scholarship, University Schools, $11.77; W. G. Switzer Memorial award, $11; Fletcher-Johnston Memorial Prize, $10; Alumnae Prize in English, $10; Sundry items, $10.17.

GIFTS

Mrs. H. R. Fairclough, widow of the late Professor H. R. Fairclough, and Mr. Rufus H. Kimball, son-in-law of Professor Fairclough, presented Professor Fairclough's collection of Greek coins, and a book describing them.

Mrs. W. B. Hendry, widow of the late Professor W. B. Hendry has presented the portrait of Professor Hendry painted by Sir Wyly Greer.

CONCLUSION

We look forward with a blending of anxiety and confidence. Our united national energies must be directed to the winning of the war. We realise more and more clearly that the fundamentals of our humane and Christian civilisation are at stake. The battle will be won by "no easy task or lies" but by "iron sacrifice of body, will and soul", in Kipling's phrase. Our universities are seeking to play a worthy part in this high enterprise. We are training professional men needed in the cause; scientists are at work on military problems; our undergraduates and graduates are either enlisting in the Active Service Force or are undergoing the preliminary discipline for national defence. As far as practicable, we are carrying on our normal programmes of teaching and research, but the war is always the background. We are trying to teach the real meaning and worth of democracy and the spiritual values which give it power. The people who live under a democracy are free to differ in their opinions and ideas. Education in a democracy, particularly higher education, aims to open men's minds and keep them open to new knowledge. This freedom must be maintained. We realise that the civilisation we defend may be not only attacked from without by ruthless force, but may also be in danger of decaying within, of being (in Lord Tweedsmuir's phrase) "decivilised". The universities have a great opportunity and a great responsibility to keep and to transmit the true democratic ideals.

As we survey our resources and mobilise them for the immediate national needs, we do not forget that the great task of universities remains through the ages "the training of intelligent and well-disposed citizens for life in the democratic state, and of forwarding the welfare of that state and of the world through its contributions to truth". Their task is "the undramatic and long-range task of diffusing light and leading among mankind".

They set forth the ideals which are to be defended; whatever therefore strengthens and purifies them strengthens and purifies democracy itself. Part of our work is to help in the making of informed, capable and useful citizens. In a modern democratic society a university seeks to preserve and to advance knowledge; it also should seek to instruct public opinion. To it public opinion has the right to turn for impartial, accurate, and scholarly instruction and interpretation.

The upheavals of these days will bring new problems to university instructors. Programmes of studies may have to be revised; methods of teaching made more effective; the possibility of new subjects to be taught carefully considered; the trends of requirements in the future must be kept in view. These are days when all university administrators and teachers need powers commensurate with their tasks.

We are grateful to the Legislature of the Province for its annual grant and we have tried to be good stewards of the educational provision thus made for us. We are grateful for many private benefactions and to the great educational foundations which have given us timely help. To the members of the Board of Governors, to the administrative officers and deans, to our whole teaching staff, and to the student body I offer sincerest thanks for the co-operation and continued interest which make the university an organ of widening service to the community.

Respectfully submitted.

H. J. CODY,
President.

November 28, 1940.

APPENDIX A

(1) Report of the Dean of the Faculty of Arts
(2) Report of the Principal of University College
(3) Report of the Dean of the Faculty of Medicine
(4) Report of the Dean of the Faculty of Applied Science and Engineering
(5) Report of the Dean of the Ontario College of Education
(6) Report of the Secretary of the Faculty of Household Science
(7) Report of the Dean of the Faculty of Forestry
(8) Report of the Dean of the Faculty of Music
(9) Report of the Dean of the School of Graduate Studies
(10) Report of the Dean of the Faculty of Dentistry
(11) Report of the Director of the School of Hygiene
(12) Report of the Librarian
(13) Report on Research
(14) Publications
(15) Report of the Director of University Extension and Publicity
(16) Report of the Director of the Department of Social Science
(17) Report of the Director of the School of Nursing
(18) Report of the Director of the Department of Military Studies
(19) Report on Health Services
(20) Report on Athletics and Physical Training
(21) Report of the Warden of Hart House
(22) Report of the Director of the Connaught Laboratories
(23) Statement regarding the Museum of Archaeology
(24) Statement regarding the Museum of Biology
(25) Statement regarding the Museum of Geology
(26) Statement regarding the Museum of Mineralogy
(27) Statement regarding the Museum of Palaeontology
(28) Statement regarding the educational work of the Royal Ontario Museum
(29) Report of the Director of the David Dunlap Observatory
(30) Report of the O.C. The Canadian Officers' Training Corps
(31) Report of the Secretary-Treasurer of the Students' Administrative Council

(2) REPORT OF THE PRINCIPAL OF UNIVERSITY COLLEGE

(Professor M. W. Wallace, M.A., Ph.D.)

I have the honour to submit my Annual Report as Principal of University College:

It is unnecessary to say that the European war has cast its baleful shadow over our work throughout the academic year. When the session opened, it was at once obvious that it was no longer possible to go forward with our project for building a men's residence in the college. Although the Committee of the Alumni had had the most gratifying success in securing the necessary funds there still remained to be raised about one hundred thousand dollars, and it was felt that asking our graduates to contribute such a large sum was hardly consistent with the necessity of concentrating all our energies on the prosecution of the war. On the other hand, the disorganisation of our programme has been much less drastic than it was in 1914. A comparatively small number of our undergraduates joined the overseas contingents during the first months of the session. About two hundred and fifty students, as members of the Canadian Officers Training Corps, have been fitting themselves for active service, while carrying on their college courses, and the close of the session saw increasing numbers leave us, especially those who were fitted to render service in the more technical branches. The great majority, however, have been willing to follow the Government's advice that they should complete their courses while at the same time undertaking elementary military training.

The whole University has been saddened by the death of Principal Emeritus Maurice Hutton which occurred on April 5. He had been a member of the college for almost sixty years, and has left upon it the indelible stamp of his character. He had taken a major part in most of the great changes that have occurred here since his arrival in 1880, and his achievements are an inseparable part of the story of our development and progress.

Since my last report another of the oldest members of our staff has passed away,—Professor Emeritus of Anglo-Saxon D. R. Keys who died on July 11, 1939. He had been a member of the staff in English Literature since 1884, and is held in affectionate remembrance by a great host of the graduates of the college.

There have been no changes in the college staff during the session. M. Assié of the department of French was called up for service in the French Army on the outbreak of war, but was released a few months later to continue his work in the college. Professor C. Cestre of the Sorbonne who had been appointed Alexander Lecturer for the session 1939-1940 was unable to leave France, and accordingly for the first time since the establishment of the Foundation in 1928 the lectures had to be omitted. Professor Cestre now hopes to come to us in November next.

It was felt that it would be appropriate under the circumstances to organise a course of public lectures on subjects related to the war, and accordingly the following lectures were delivered in Convocation Hall:

The Historical Background of the War, by Professor Ralph Flenley of the Department of History.

The Immediate Causes of the War, by Professor B. Wilkinson of the Department of History.

The British Commonwealth at War, by Col. George A. Drew, Leader of the Opposition in the Ontario Legislative Assembly.

Democracy as a Way of Life, by Principal Malcolm W. Wallace.

The Position of the United States, by Professor J. B. Brebner of Columbia University.

Things that Make a War Worth Fighting, by Mr. B. K. Sandwell, Editor of *Saturday Night*.

During the Michaelmas Term the regular Thursday Afternoon lectures which are open to the public, were delivered in Room 8 of the college before large and usually overflowing audiences. The list of subjects and lecturers was as follows:

W. B. Yeats, by Professor Pelham Edgar
Georges Duhamel, by Professor C. D. Rouillard
Thomas Mann, by Professor H. Boeschenstein
Walter Pater, by Professor Gilbert Norwood
Irving Babbitt, by Professor A. S. P. Woodhouse
Jean Giraudoux, by Miss I. G. Balthazard
Thomas Wolfe, by Professor E. K. Brown
Sigurd Hoel, by Mr. M. Joos
Francois Mauriac, by Professor J. G. Andison
R. M. Rilke, by Professor Barker Fairley

The centenary of the birth of Thomas Hardy was observed by the delivery of a lecture in the West Hall by Professor J. F. Macdonald.

The following benefactions have been received from friends of the college during the academic year:

(1) From the Provincial Government, the Board of Governors and many Alumni of the college donations for the new residence for the men of the college.
(2) From friends of the late Professors L. Allen and H. S. McKellar of the department of French the sum of $1000 to establish the Allen-McKellar Memorial Prize in French and the additional sum of $25.34 to provide the initial award.
(3) From the Psi Psi Chapter of the Alpha Chi Omega Fraternity, a bursary of $70.
(4) From the Public Speaking Association, a bursary of $50.
(5) From the Hollywood Theatre, $50 to be used as prize-money in the department of French.
(6) From the University College Alumni Association, $25 to be used as prize-money for a man of the graduating year.
(7) From Mr. A. Gibson the gift of a book.
(8) From the staff of the college a beautiful trophy for the Literary and Athletic Association.
(9) From Birks-Ellis-Ryrie a trophy for freshman competition.
(10) From Kents Limited a special prize for the outstanding athlete of the year.
(11) From the Registrar a prize for the winner of the undergraduate golf competition.

Graduate fellowships in the gift of the college have been awarded as follows:

(*a*) The Reuben Wells Leonard Fellowship ($650) to Miss F. M. Hill for graduate work in psychology in this university.
(*b*) The Gertrud Davis Fellowship ($500) to Mr. Sidney Fuller for graduate work in German in the University of Wisconsin.
(*c*) Three J. S. McLean Fellowships of the value of $625 each to the following students:
  (i) Mr. T. C. Daly who will continue his English studies at Harvard University.
  (ii) Mr. I. B. MacPhail who goes to Princeton for graduate work in political science.
  (iii) Miss Frances G. Halpenny who expects to continue her work in the department of English in this university.

Many other members of the graduating class were awarded fellowships in American universities.

(3) REPORT OF THE DEAN OF THE FACULTY OF MEDICINE

(W. E. Gallie, M.D., F.R.C.S.)

The opening of the session 1939-1940 brought to the Faculty the immediate necessity of determining the wartime policies of the Faculty. The enquiry of the President at Ottawa brought the following reply from the Deputy Minister of Militia:—

"Reference is made to the national emergency which has recently developed and consideration has been given as to how it will affect the numbers of medical doctors who may be expected to graduate during the next few years.

"It is considered advisable that action should be taken to prohibit the appointment of medical students in branches of the service other than medical, and enlistment in any of the services generally, that it may be ensured that those who are now attending medical courses may complete their studies and therefore provide that needs of the civil population and the defence forces continue to be made available.

"It is difficult to estimate even approximately the period restrictions, as indicated in the preceding paragraph, may be continued, but it is felt that at present they should be applicable at least to students of the classes expected to graduate in the years 1940-44.

"It is also desired to stress the value of training medical sections of the C.O.T.C. and to urge all medical students to enrol and attend the training."

In addition the President was informed that the government considered that it would be unwise, for the present, to make any change in the medical course designed to shorten it, and that consideration would be given to measures to prevent excessive depletion or the disorganisation of the staffs of medical schools and hospitals.

Based on these instructions, therefore, the school has carried on much as in normal times, with the exception that the departure of those members of the staff who have enlisted has laid heavier responsibilities on those who have remained and that certain less important activities have been eliminated. It is the intention of the Faculty, however, to adapt itself wholeheartedly to the necessities of the times and to hold itself prepared for whatever changes of programme the interests of our country may require.

In accordance with the wishes of the Minister of Militia, the students were encouraged to join the University of Toronto Contingent, Canadian Officers Training Corps and thus have the opportunity of obtaining qualification as officers in the Canadian military forces. One hundred and sixty-one medical students enlisted in the C.O.T.C., those in the early years taking the work to qualify them as infantry officers and those in the final two years, that required to qualify them as officers in the medical service.

Four or five hours a week were spent by these students in learning military theory and practice over and above the time required by their ordinary academic studies. They worked hard and conscientiously at both soldiering and acquiring a medical education so that, when they graduated, they would be ready to serve their country as medical officers. The Faculty took cognizance of the extra load these students were carrying and showed this by awarding a bonus up to ten marks to those students reported upon favourably by the C.O.T.C.

Early in the session the Caput expressed the opinion that during war times student civilian activities should be made as inconspicuous as possible. As a result only those dinners and dances that could not be accommodated in Hart House were held outside University property and the annual Daffydil performance was cancelled.

Graduates who have sons and daughters in Medicine will have noted with interest the class lists which were forwarded to each student after this year's examination. Similar lists have been issued by the Faculties of Applied Science,

Arts and Dentistry for some years and have been so favourably commented upon that the plan has been adopted in Medicine as well.

One of the most interesting developments of the past year has been the plan for selecting interns suggested and put into operation by the Canadian Intern Board. This Board consists of students in the graduating year of the various Medical Schools in Canada and of prominent men of the profession representing medical schools, hospitals and organised medicine. The constitution describes its operation as follows:—"Under the present system of appointment of interns there are certain grave maladjustments giving rise to grief among a great number of prospective interns on the one hand and the intern boards of many hospitals on the other hand.

"Considerable inconvenience is particularly caused by applicants who on receiving appointments from several hospitals and choosing the hospital of their preference, neglect to inform the other hospitals that they are not accepting their appointments. This neglect at times leaves hospitals with a less complete or inferior staff of interns than they might otherwise have obtained. The same situation is also unfair to other applicants who may thus be kept out of hospitals where they might otherwise have been accepted and due to pressure of times be forced to accept an internship less preferable to him than he deserves and could have if these conditions did not obtain.

"Another cause of confusion, expense and worry is presented by the differences in the dates of announcing the appointments by various hospitals, many of which require an immediate reply from the applicant as to whether or not he wishes to accept their appointment.

"The National Executive of the Canadian Association of Medical Students and Interns has prepared a plan which is intended to be advantageous to both parties concerned. In the plan under consideration the present relation between applicant and hospital remains essentially unchanged. At the same time the causes underlying the present confusion are eliminated and appointments facilitated by clearing them through a central board."

The function of the Board is to remedy the weaknesses of the present system by assisting both the students and the hospitals to settle this problem in the most satisfactory manner to both parties. According to their plan of procedure, the student makes a written application to the hospitals in which he is willing to accept internship and, at the same time, he notifies the Intern Board, on a form provided for the purpose, of the order of his preference for the various hospitals to which he has applied. The selection committee of each hospital chooses the interns it prefers from among the applicants to that hospital and names also a number of alternates to provide for the possibility that some of the applicants they have selected may have expressed a preference for some other hospital on their form to the Intern Board. The Board considers the lists of selections made by the hospitals and the students' choices of preference until the lists of choice have been exhausted. The Board then sends to each hospital the list of those applicants who have been acceptable to that hospital and who have indicated that that hospital is their first choice. If there are still some vacancies these are filled from the alternates. On the whole the plan worked well and with a little experience it will probably solve the difficulties of both students and hospitals.

The Charles Mickle Fellowship for 1940 was awarded to Professor Philip Edward Smith, professor of anatomy at the College of Physicians and Surgeons, Columbia University, New York, for his outstanding work on the pituitary gland which has led to great advances in the whole conception of pituitary disease.

The annual Mickle Fellowship Lecture for 1939 was delivered on April 5th, 1940, by Professor Charles H. Best, M.A., M.D., D.Sc. Lond., F.R.S., professor of physiology in Toronto. His subject was "Blood Clotting, Thrombosis and the Action of Heparin" upon which he has done so much valuable research. This

lecture was heard by the most enthusiastic and the largest audience that ever attended a Mickle Lecture.

The Donald C. Balfour Lecture was delivered this year by Professor George Grey Turner of the British Postgraduate Medical School, London, England. It was given on October 11th instead of Lister Day, April 5th, as is the custom, to suit the convenience of Professor Grey Turner who had been lecturing in South America. The subject of the lecture was "The Transplantation of the Ureters" concerning which the lecturer has made important contributions. He made reference to the fact that pioneer work on this subject had been done here in Toronto by Dr. G. A. Peters, over forty years ago.

Reference has been made in previous reports to the unavoidable necessity for raising the annual fees. The hardship caused by this among the students of limited means has been mitigated by the award of small bursaries in special cases. In the past year 19 such bursaries were awarded in the sixth year, 18 in the fifth, 8 in the fourth, 7 in the third and 3 in the second. They range from $50.00 to $150.00.

Two postgraduate courses were given in the latter part of September, one on physiotherapy and one on fractures. These courses of a week duration attract a large attendance from all over the country and are evidently serving the purpose for which they were intended. This year a course on traumatic surgery will be given, in the hope that it will be useful to men who are entering the army.

An account of the various researches that have been going on in this Faculty will be found in the departmental reports. Several indicate that important studies are being made for war purposes. One of the most important is that being conducted by Sir Frederick Banting in search of a solution of the airhunger that attacks pilots while flying at high altitudes and of the so-called "blackouts" that occur in some pilots when changing direction at the terrific speed at which modern fighter planes travel. Reports on the progress of these studies are naturally only available to the Department of National Defence. Another interesting research is that being conducted by Professor Best on the preparation of concentrated blood plasm for the treatment of shock and haemorrhage. This has now reached a stage at which such large numbers of donors have been tested and selected that a steady supply of the sterile concentrated plasm is available for the casualties when they come.

The important research on silicosis described in previous reports has now reached a stage where a clinical test is being conducted. The favourable results on animals resulting from the addition to the silica laden air of finely powdered aluminium dust has been further supported by the finding that the aluminium therapy has a decidedly favourable effect on the lungs of animals in which silicosis is already established.

The international recognition that is accorded the work of the Department of Medical Research is indicated by the list of contributors to its expenses. They are:

The Banting Foundation
The Department of National Defence
The Josiah Macy Jr. Foundation, New York
The Scottish Rite Masons, Northern Jurisdiction
The Neuropsychiatric Institute, Hartford Retreat
The Rockefeller Foundation, New York
The Eli Lilly Company, Indianapolis
H. MacLean, Merrickville
The Ontario Mining Association.

Among the reports of the clinical departments, I direct your attention to that of the department of paediatrics. Among many researches is described a clinical experiment, based on long laboratory study, on the prevention of air-borne infection by means of barriers of ultra-violet light. During the past seven

months sixty infants have been treated in the specially constructed cubicles used in the experiment and not a single case of cross infection has occurred. This gives promise to eliminate the chief cause of mortality in infant wards, and indeed suggests a method of prevention of air-borne contagions of all sorts.

The most important permanent staff change during this year has been the appointment of Dr. G. Lyman Duff, assistant professor of pathology under Professor Wm. Boyd, as professor of pathology at McGill University. Dr. Duff graduated here in 1929 and immediately joined the staff in pathology under Professor Klotz. In 1931 he went to Johns Hopkins University on a National Research Fellowship and remained there under Professor MacCallum till 1935 when he was recalled to Toronto. Dr. Duff is a brilliant young pathologist and will make a strong addition to the group of graduates of this school who now hold important posts at McGill.

The call of the army has caused many temporary changes in the staff. With No. 15 General Hospital have gone Colonel C. A. Rae of the Department of Otolaryngology as Officer Commanding; Lieut.-Colonel W. P. Warner as Officer in charge of Medicine; Lieut.-Colonel J. A. MacFarlane as officer in charge of Surgery; Major A. C. Singleton in charge of Radiology; Major S. M. Campbell in charge of Anaesthesia; Major Wansbrough, Major R. W. I. Urquhart, Major Harris M. Gray, Major D. E. Cannell, and Captains S. D. Gordon, F. G. Kergin, C. Aberhart, A. W. M. White, T. R. Sarjeant, H. E. LeMasurier, H. W. McCart, D. E. Magner and H. E. Rykert. With the Toronto Hospital are Lieut.-Colonel A. R. Hagerman, O.C., Major C. H. Watson and Major K. G. Gray. With No. 1 Neurological Hospital are Major H. H. Hyland, Captains E. H. Botterell and J. C. Richardson, and Lieut. C. P. McCormick, and Lieut. G. D. M. Boddington. With No. 2 Casualty Clearing Station are Captain Ian Macdonald, Lieut. J. R. F. Mills and Lieut. R. B. Kerr. With the Fourth Canadian Field Regiment, Royal Canadian Artillery, is Lieut. W. A. Oille. Colonel Duncan Graham, the professor of medicine, has been appointed Consultant in Medicine at the office of the Director General of the Medical Services and is required to spend two days a week in Ottawa.

Honours have come this year to Professor Alan Brown, who has been elected a Fellow of the Royal College of Physicians, London, (Honoris Causa), to Professor Duncan Graham, who has been elected President of the Canadian Medical Association, to Dr. D. E. Robertson, who is President of the American Orthopaedic Association, and to the Assistant Dean, Dr. E. S. Ryerson, who has been elected Vice-President of the Medical Council of Canada.

It is my sad duty to record the deaths during this year of Major General J. T. Fotheringham, Dr. A. H. W. Caulfeild and Professor J. G. FitzGerald. General Fotheringham was well known to all the graduates of this School and they took great pride in the distinguished position he achieved in the service of his country during the Great War. Dr. Caulfeild died in the midst of a most active and distinguished career. His work on tuberculosis and allergy brought him international recognition. Professor FitzGerald will be remembered as the founder and builder of the Connaught Laboratories and the School of Hygiene. To his vision and great abilities we owe much for the extraordinary position this University occupies to-day and his name will be forever enrolled among those who made this School.

(4) REPORT OF THE DEAN OF THE FACULTY OF APPLIED SCIENCE AND ENGINEERING

(C. H. Mitchell, C.B., C.M.G., C.E., D.Eng.)

The session of 1939-40 opened three weeks after the declaration of war by Great Britain and the Empire against Germany, and this had a profound influence upon the work of the Faculty throughout the whole year.

The short period intervening between the declaration of war and the opening of the University did not appear, however, to influence the attendance of students in the faculty. On the contrary, there was a definite increase which appeared to be in line with the expected increase referred to in my report of a year ago. Obviously the momentum due to increased activity in engineering in Canada carried on and was reflected by this increase, notwithstanding the incidence of the war.

It was very encouraging from the commencement of the session that the students applied themselves to their work in the most earnest manner. They all seemed to realise that theirs was a serious duty and that they themselves were embarking on the war to help by gaining their applied science education in order that their services could be made available as soon as opportunity offered. This principle was especially emphasised by the staff at the commencement of the year's work and it was most gratifying to see the spirit of the students of all years in their promptness to respond. This also helped to allay any undue unrest or tendency to rush off to enlist as they did in 1914.

All students, especially those of the two senior years, realised that, quite apart from the growing demand which the increasing activity in engineering of the previous two years had created, their services would now be more greatly needed, whether in Canada or overseas. This new war, much more than that of 1914-18, was definitely an engineers' war and they all wished to prepare themselves as rapidly as possible for this new demand.

In my report of a year ago I presented a review of the rapidly increasing attendance in this faculty and, in an endeavour to forecast the future trend, I analysed the increases in some of the more active departments. In that report for the session 1938-39 I pointed out that there was an increase in the first year of 56 per cent. in mechanical and 18 per cent. in chemical engineering, the entire first year having an increase of over 15 per cent. During the session 1939-40, now being reported upon, one of these, mechanical, decreased by a considerable percentage, probably due to a reaction, whereas chemical engineering again increased this year by 13 per cent. In addition, civil engineering first year, nearly doubled in number, increasing from 19 to 36, and in electrical engineering the increase was nearly 50 per cent., being from 40 to 59. These changes, increases though they are, have not caused the inconvenience and difficulties in respect of accommodation and instructional facilities which we have experienced in recent years when the increased attendance has been confined to only two departments. The increases have been distributed over the three departments named, while mining and metallurgy have been practically unchanged, and architecture and engineering physics have decreased.

In total attendance, all years, the curve of increase has continued upward. This year's attendance at 961 showed an increase of 4 per cent. over the previous year of 925 which in turn was an increase of 11 per cent. over the year before that. Since 1930, a period of ten years, the attendance has fluctuated from a low of 766, in 1935-36, the carry-over from depression years, to the present 961. Six of these years have shown attendances of 850 and over, of which three were over 900. It is well-nigh impossible to forecast the probable attendance for next session. It is to be expected that quite a number will be drawn off by war enlistment and munition activities, especially from the senior years, but there is no reason to expect an incoming first year much less than last, indeed it might be considerably more, under these new war conditions.

The performance of the students in their examinations has been more than usually gratifying under the disturbing circumstances. It is doubtless largely due to their serious application to their work. Possibly there may be a contributary cause in the first year where a much larger proportion came into the faculty on straight matriculation examination instead of by recommendation. The announcement that the latter method of entrance will be discontinued has been received with much satisfaction for it is believed it has contributed in large

measure to the heavy casualties in the first year during the recent sessions while this privilege has been permitted.

Notwithstanding inclusion in last year's report, I again present a table of examination results for the past eight years, as follows, to indicate the trends referred to:—

PERCENTAGES OF FAILURES IN ANNUAL EXAMINATIONS

	1933	1934	1935	1936	1937	1938	1939	1940
First Year	21.0	23.7	27.5	32.2	24.9	22.7	29.0	23.0
Second Year	20.8	18.0	26.5	23.5	19.2	13.2	16.0	16.4
Third Year	8.0	11.5	10.6	17.2	7.3	7.6	6.8	5.6
Fourth Year	1.3	4.4	2.8	1.2	1.4	0.7	4.2	1.5

In connection with the annual examinations this year, it may be interesting to note as a matter of record, that special credit was given to students who managed, along with their regular curriculum work, to give the time to and take out officers' certificates in the military work of the Canadian Officers' Training Corps. By a resolution of Council, supplements of from 5 per cent. to 10 per cent. were allowed, based upon reports from the Commanding Officer C.O.T.C., awarded for efficiency shown, attendance, etc. There were 338 so reported upon as having served. A credit of 10 was granted to 43 candidates, 5 for 178 candidates, scattered below 5 for 18, while no credits were allotted for 99 candidates. These returns were made for 127 students of first year, 94 for second, 53 for third, and 64 for fourth year. Forty students in the four years were raised to honour standing by this means while 13 were allowed their years by means of their supplementary C.O.T.C. work. The foregoing was reported to and approved by the Senate.

The staff, as in the previous session, has been carrying a very heavy load and this is particularly noticeable because of the many options which it has been compelled to meet, especially due to the development of the courses in engineering physics. Moreover, the casualties in the staff, referred to in last year's Report, have continued. One professor and one associate professor have been absent the whole year on sick leave.

A notable feature this session has been the survey of the faculty, announced in last year's report, which has been conducted by Dr. Dugald C. Jackson, professor emeritus of Massachusetts Institute of Technology. The choice of Professor Jackson by the Board of Governors to carry this out was a very happy one and the faculty was fortunate in obtaining the services of such an eminent and experienced engineering educationalist to undertake it. He brought to our aid a wide teaching and engineering experience as well as a very full understanding of the requirements of industry and the country generally.

Professor Jackson commenced his studies here in October and completed them in February when he presented to the President and Board of Governors a very comprehensive and valuable report covering many phases of the work involved in our curriculum as developed in the past two decades, our accommodation and attendance problems, our staff and its composition, and our relations to the alumni body. In this he was assisted by the hearty cooperation of the faculty staff and university officers, by the students and by the officers and members of the engineering alumni association.

This report was made available to the Council of the Faculty in April so that there has not yet been much opportunity to make any extensive study of it with a view to taking advantage of the many constructive suggestions contained. Outstanding among the findings in the report were various ones of which the Council and staff have for some years been aware, such as:—a very much overcrowded curriculum; an attempt to do too much and undertake a too diversified programme of instruction in the many engineering fields; a consequent overworking of students and staff alike; insufficient accommodation facilities and equipment, especially in mechanical and chemical engineering and, on the other side of the account, insufficient instruction in economics and English.

During Professor Jackson's period of study, the Council of the Faculty appointed in January, a special committee composed of all heads of departments to more especially study the curriculum question and later enlarged the functions to consider all phases involved in his report which might properly be the function of the Council and staff. Later, in May, a small Sub-Committee of this main Committee, under authorisation of the Board of Governors, set out to visit a number of engineering colleges in the United States and Canada, twelve in all. This Sub-Committee has just recently returned and has, in June, prepared a comprehensive report of its investigations. It is the purpose, early in the coming session, to make a considerable study of these two reports and it is hoped that from them will be evolved various beneficial changes which will be of great value to the faculty, having in mind the trends and requirements of engineering education in Canada for some years to come.

Research work has continued in the faculty throughout the year notwithstanding the strain of overcrowding, overwork and insufficient staff to make no reference to the simultaneous war tension. A Report of the work undertaken and accomplished by the School of Engineering Research in the faculty goes forward concurrently with this report. It will be observed that there have been 27 researches done during the session on subjects which bear upon useful phases and applications in engineering and industrial fields, which is the prime objective of the School.

(5) REPORT OF THE DEAN OF THE ONTARIO COLLEGE OF EDUCATION

(*Dr. J. G. Althouse*)

The outbreak of war in September caused a decrease in the enrolment of men in the College and necessitated some changes in the programme of studies. This College was among the first to allow definite exemptions from the regular training course to male students enrolled in the C.O.T.C. Men who were accepted in the C.A.S.C. near the close of the College year and whose training course in the College had been satisfactory were recommended for teaching certificates.

Two new courses for teachers-in-training were introduced. Training and remedial work in diction and voice production were given to all those proceeding to High School Assistants' Certificates, and an optional supplementary course in educational counselling was offered. Enrolment in the latter course was restricted to those with previous training in psychology; great interest was evinced and the experiment amply justified itself.

The Library School opened with the unprecedented enrolment of fifty-one. The requirements for admission to the course leading to the university diploma were amended to emphasise the aim of this course, which is to provide professional training to those who have already proved their worth in practical library service. Applicants for admission to the diploma course are now required to present, in addition to an honour matriculation certificate, evidence of one year's successful experience in an approved library, and a statement from the Board of the library granting the applicant leave of absence to attend the Library School. Summer sessions were conducted to provide the additional training required for the degree of B.L.S. by those who graduated from the School before 1937. These courses were well patronised by students eager to qualify for the degree in Library Science.

The staff of the Department of Educational Research was strengthened by the appointment of R. W. B. Jackson, B.A. (Alta.), Ph.D. (London), a specialist in statistics and testing. He immediately began his researches, and Bulletin 11, "Application of the Analysis of Variance and Covariance Method to Educational

Problems", is the first fruit of his labours. During the summer of 1940, Dr. Jackson worked at the Dominion Bureau of Statistics, Ottawa, on the problem of the collection and compilation of educational statistics in Canada in some more uniform manner than at the present exists.

The members of the Department of Educational Research have continued to make standardised tests for Canadian schools. The past session saw the completion of the Dominion Group Test of Intelligence (Advanced) and a Reading Test for Grade I. A French Grammar Test reached its final stages, while Norms for our French Reading and French Vocabulary Tests were established. A Group Test of Intelligence (Junior) is in process of being standardised and some progress has been made with the construction of a Reading Test for intermediate grades. At the annual conference on scientific methods in education organised by the Dominion Philosophical and Theological College of Ottawa, Dr. J. A. Long contributed a paper entitled "The Rôle of the Teacher in Character Education". At the close of the session Mr. F. W. Minkler resigned from the staff of the Research Department to take up the position of Inspector of Public Schools in Essex County.

The session 1939-40 was darkened by the sudden death of two valued and veteran members of the staff. On December 16th, Professor F. E. Coombs was suddenly stricken. He had been among the charter members of the Faculty of Education gathered by Dean Pakenham in 1910, and had served with loyalty and distinction since that time. Both in his classes in the course in Public School Methods and in his pedagogy groups studying science of education, he had given sane constructive leadership, and had reinforced the effectiveness of his scholarliness by a genius for friendship. On January 5th, Professor G. M. Jones, who was returning to his duties after brief sick leave, collapsed on the street. Professor Jones' term of service in the College dated back to 1915. From the beginning, his duties were extensive and onerous, at first in the departments of English and history, later with special attention to history, and still later with the added responsibility of the editorship of THE SCHOOL. All of these duties Professor Jones performed with precision, with enthusiasm, and with a modesty and consideration which endeared him to colleagues and students alike. No institution can lose such members of its staff without profound regret, or without serious dislocation of its programme. That the teacher-training courses carried on without interruption is a tribute to the willing cooperation of the whole staff, and particularly to the generous actions of Dr. C. E. Phillips, Mr. J. L. Gill and Mr. N. McLeod (of the University of Toronto Schools staff), of Mr. F. W. Minkler of the Research Department, and of Mr. J. H. Mills who returned, after a brief enjoyment of the leisure of retirement, to full-time duty in the University Schools.

At the close of the session, Miss A. Enid Robertson retired from the home economics department of the College. Miss Robertson's influence on the theory and practice of home economics in the secondary schools of the Province has been profound. She has given to the teachers of that subject an example of thoroughness, of accuracy and of unassuming enthusiasm, the importance of which can hardly be over-emphasised.

(6) REPORT OF THE SECRETARY OF THE FACULTY OF HOUSEHOLD SCIENCE

(Professor C. C. Benson)

Work in this Faculty has proceeded satisfactorily and much as in recent years. The registration has been about the same; there were 50 students in all, of whom 19 came from Macdonald Institute last autumn. We had in attendance also, 12 students from Macdonald Institute who were completing the work in

the specialist course in the fourth year, and further, there have been registered with us two students who graduated from the pass course in this faculty some years ago and who now returned to complete the academic requirements for the specialist certificate for teaching in the secondary schools of the province. We also had registered with us 5 students from other provinces who came to this University because they find that they can obtain satisfactory work here.

The work of the students has, on the whole, been better than in previous years, and we believe that we owe this partly to the extra assistance which has been given to the students of Macdonald Institute who were expecting to come to complete the work for the degree here in the University.

The faculty has been particularly concerned with changes which should be brought about in the entrance requirements as a result of the changes which have been made in the curriculum of the Ontario secondary schools. This matter has concerned the faculty in two ways, first, in the establishing of requirements for admission, and secondly, in connection with the details of the work that we should offer in the first and second years. The Faculty Council are anxious to make the matriculation requirements, in general, similar to those required for admission to the Faculty of Arts, but wish to make it possible for students to make use of the courses now being offered in home economics in the secondary schools, and are, therefore, expecting to allow this subject to be used as one of those offered as an option for pass matriculation.

It has seemed to the Faculty Council wise to make certain changes in the curriculum of the first year of the course for the B.H.Sc. degree. As it now seems probable that some of the students who come to us from the other provinces may wish to transfer at the end of the first year in this faculty, to the course in household economics in the Faculty of Arts, an attempt has been made to make the first year of these two courses of equal value.

We have had good service from the instructors in this faculty, but must again record a number of changes due to marriage.

(7) REPORT OF THE DEAN OF THE FACULTY OF FORESTRY

(Dr. C. D. Howe)

The best thing to report for a long time is the prospect of the University acquiring a school forest for the use of our students. One reason for the long delay in obtaining such an area has been the difficulty of finding a tract that met our requirements in proper forest conditions and accessibility. In all the places we have used for a practice camp one or the other of these conditions has not been fulfilled. The acquirement of a university forest will enlarge the students' opportunities in practical field work with the very great advantage as the years pass of the results of accumulated experience. The work on a school forest area for nine weeks during the course, together with a week's study of plantations and nurseries at the Provincial forest station in Norfolk county, a week's visit to logging operations in the north country, fifteen to twenty visits to mills and wood manufacturing plants in the environs of Toronto, as well as employment in the woods during three summer vacations for practically all the undergraduates, all give our students a variety of practical experience probably unequalled in other forestry schools.

Another matter to which I have already called your attention is the desirability of establishing a course on the natural resources of the Dominion and their conservation. It is acknowledged by all that the foundation of the material prosperity of Canada lies in her natural resources. During normal times at least, no more important problems of citizenship can exist than those relating to the proper development and conservation of such resources as the agricultural and forest soils, mines and water powers, and fish and game. It should be an important function of a university to supply its students with such information

as would lead to an intelligent understanding of the natural resources problems, yet in the neighborhood of eight hundred young men and women, who presumably will become leaders of public opinion in their communities, are graduated from the University each year without any knowledge, so far as the university instruction is concerned, of the part the natural resources play in the welfare of the country or any basis for an intelligent opinion on their proper treatment.

Therefore in order to prepare the students for a better understanding of the obligations of citizenship it is recommended that a course of twenty-four lectures on our natural resources and their conservation, be established in the University for the students in the Faculty of Arts, the Faculty of Applied Science and Engineering, the Faculty of Medicine, and the Faculty of Forestry. This is a beginning. Eventually the course should be extended to all the students of the University. The lectures would cover discussions of the resources and problems connected with agriculture, mining, forestry, water powers and water transportation, fish and game, and tourist traffic.

The increasing interest in forestry is indicated by the sustained increase in the first year enrolment, twenty last fall compared with fourteen in the fall of 1938. Of the forty-one students in the faculty, thirty-three are in the two lower classes.

Only one undergraduate dropped out to enlist, eleven enrolled in the C.O.T.C. and two have qualified for commissions. In all fourteen graduates and former students have enlisted.

The employment of graduates and undergraduates is better, under the circumstances, than might have been expected. The seven men in the fourth year class are employed by the Ontario Forestry Branch. The same organisation has taken in addition six undergraduates, thus making the Ontario Government the employer of the largest number this year. The pulp and paper industry has taken twenty-four undergraduates with the Spruce Falls Power and Paper Company employing eight men, the Pulpwood Supply Company, seven, the Abitibi Power and Paper Company, six, Price Brothers Company, the Canadian International Paper Company, and the Anglo-Newfoundland Development Company, one man each. One man is working in a recreational camp. Three men are not employed in forestry work.

(8) REPORT OF THE DEAN OF THE FACULTY OF MUSIC

(Sir Ernest MacMillan)

During the year 1939-40 the number of students registered for the Mus.B. degree was fifty-one. Nine of these were registered in the first year, nineteen in the second, and twenty-three in the third. The degree of Bachelor of Music was conferred on seven students; the degree of Doctor of Music was conferred on two students. Coordination between the University and the Conservatory Lecture Courses again enabled students in the Faculty of Music to be offered a number of extended courses of twenty-five lectures each.

The number of students registered in the music course in the Faculty of Arts was twenty-two. Nine of these were registered in the first year, eight in the second, and five in the third. All lectures and tutorial classes in the course have been given by Professor Healey Willan and Professor Leo Smith. The course appears to be working satisfactorily on the lines originally planned.

Eight organ recitals were given in Convocation Hall—four by Professor Willan, university organist, and one each by John Reymes-King, Quentin Maclean, Dr. Charles Peaker, and Frederick C. Silvester.

Musical activities in Hart House, although not lying within the province of this Faculty, are always followed with great interest. The usual Sunday evening and Friday afternoon series of concerts have been well attended. Gratifying

progress has been made by the Hart House Glee Club, under the direction of Dr. Charles Peaker.

Mr. J. L. Richardson's Carillon Recitals from the Memorial Tower continue to interest large numbers of the public and contribute greatly to the enjoyment of open air university functions, such as those at Convocation and on Armistice Day.

The Conservatory Choir gave its annual performance of Bach's "St. Matthew Passion" on March 19th to an audience which completely filled Convocation Hall; six hundred and seventy students' seats were sold. On December 5th the Choir sang also Beethoven's Ninth Symphony and John Ireland's "These Things Shall Be" in Massey Hall, with the Toronto Symphony Orchestra.

The Conservatory Orchestra, under the direction of Mr. Ettore Mazzoleni, has had an exceptionally active season, appearing on February 13th in Convocation Hall, when the programme included three works by Toronto composers, and also on May 13th in Massey Hall.

In addition to the usual two Closing Concerts given during the summer term, in Massey Hall, special Closing Concerts for pupils at the Conservatory Branches were given at the Conservatory early in June, and a special concert by children's choirs composed of pupils from various branches was given on April 27th.

Concerts given by the Conservatory String Quartet have been well attended, and the Chamber Music Club has in the course of a series of interesting programmes given first performances by a number of Canadian composers.

For the 1940 Summer School the Conservatory has planned an extensive series of lecture courses on teaching methods, and students from many different parts of the country will attend. Special master classes will be given by the popular pianist Mieczyslaw Münz (Piano) and by the English baritone John Goss (Singing).

At the end of May registration for tuition at the Conservatory of Music was 4,376; the number of candidates for examinations for the present season was 13,569.

(9) REPORT OF THE DEAN OF THE SCHOOL OF GRADUATE STUDIES

(Professor G. S. Brett)

The number of students registered in the School of Graduate Studies for the year 1939-1940 was 528. This is equivalent to a decrease of 37 as compared with the total (565) for 1938-9. The number registered for the Ph.D. degree was 140, an increase of 6 as compared with the number for 1938-9 and an increase of 22 as compared with 1937-8. The number of candidates for the M.A. shows an increase of 9, having risen from 177 to 186. The number of students enrolled as graduate students not proceeding to a degree declined from 145 in 1938-9 to 104 in 1939-40. In this grade there has been a decline of 101 in two years, equivalent to approximately 50 per cent. (1937-8, 205: 1939-40, 104). Analysis of these figures seems to show that the decline in the total registration is mainly due to decline in the registration of students not proceeding to a degree. As suggested in the report for 1938-9, this is probably the effect of the increase in fees. In so far as this result relieves the demands on the teaching staff it may be considered beneficial, assuming that the majority of these students were not prepared to pursue advanced studies intensively. On the other hand, it is undesirable that the cost of graduate courses should eliminate students anxious to acquire more education rather than acquire degrees: also the advantage which the University may derive from increase of fees is offset by a considerable decrease in enrolment and therefore the limit to which fees can be increased with actual gain requires consideration. The number of men enrolled was 419, a decrease

of 11: the number of women declined from 135 in 1938-9 to 109 in the current year. The number of students recommended for the various degrees showed no significant fluctuations; in the case of candidates for Ph.D. and M.A. there was a small increase.

The number of students resident in Toronto was 215, a decline of 18; the number from the Province of Ontario (excluding Toronto) was 149, the same as last year. (For detailed distribution see Appendix B (*k*). The total number from the Province of Ontario was 364. The numbers from other Provinces were:—Saskatchewan 21, British Columbia 20, Manitoba 19, Nova Scotia 16, New Brunswick 15, Alberta 14, Quebec 6. The number from the United States was 33, and the total number from other sources 20. These figures indicate no change from the normal average enrolments.

The students in the School of Graduate Studies were drawn from 16 Canadian universities, 25 American (U.S.A.) universities and colleges, 9 British universities including three in British India, and 6 classed as foreign (Copenhagen 2, China 4). From the Universities outside Canada the number enrolled was generally not more than one student. The enrolment from universities in Ontario was as follows:—University of Toronto 294, Queen's University 30, University of Western Ontario 28, McMaster University 20.

The distribution of the candidates for the different degrees was as follows:—

	Men	Women	Total
Candidates for Degree of Ph.D.	121	19	140
Candidates for Degree of M.A.	130	56	186
Candidates for Degree of M.Com.	3	...	3
Candidates for Degree of M.S.	5	...	5
Candidates for Degree of M.A.Sc.	14	...	14
Candidates for Degree of Civil Engineer	1	...	1
Candidates for Degree of Electrical Engineer	1	...	1
Candidates for Degree of D.Paed.	39	2	41
Candidates for Degree of M.Sc. (Dent.)	1	...	1
Candidates for Degree of Mus. Doc.	3	...	3
Candidates for Degree of M.S.A.	27	...	27
Candidates for Degree of D.V.Sc.	2	...	2
Graduate Students & Auditors	72	32	104
	419	109	528

The distribution of the candidates according to the major subject was:—Anatomy 1, anthropology 3, applied mathematics 2, astronomy 1, biochemistry 16, biology 28, botany 21, chemistry 45, chemical engineering 8, chinese archaeology 2, civil engineering 2, classics 13, dentistry 1, educational theory 1, electrical engineering 3, English 44, food chemistry 2, geography 4, geology & palaeontology 17, germanic languages 8, history 21, household science 5, hygiene and preventive medicine 6, law 3, mathematics 13, mechanical engineering 3, metallurgical engineering 2, mineralogy 2, mining engineering 1, music 3, pathological chemistry 4, pedagogy 41, pharmacology 2, philosophy 49, physics 35, physiology 9, physiological hygiene 2, political science 29, psychology 25, romance languages 20, semitic languages 5, surgery 5, veterinary science 2.

The number of students recommended for degrees was:—

Ph.D.	29
M.A.	110
M.Com.	1
M.S.	1
M.A.Sc.	9
C.E.	1
E.E.	1
D.Paed.	3
D.V.Sc.	1
M.S.A.	2
Mus. Doc.	2

Fellowships:—The fellowships and scholarships awarded by the Council of the

School are given below. This list does not include the awards made directly by the Faculty of Medicine, College Councils, or other independent committees of award:—

Open Fellowships:—
Miss J. C. MacLaurin, B.A. British Columbia, department of English.
Miss J. C. M. Swanson, M.A. Saskatchewan, department of English.

Reuben Wells Leonard Fellowships:—
Miss L. E. Neal, M.A. Western Ontario, department of psychology.
J. G. L. Pearson, M.A. Toronto, department of philosophy.
Miss J. I. Kirkpatrick, M.A. Toronto, department of classics.
J. A. Doull, B.A. Dalhousie, department of classics.
J. O. Dineen, B.Sc. New Brunswick, department of physics.
T. J. Oleson, M.A. Manitoba, department of history.

Alexander Mackenzie Fellowships:—
H. W. McCready, B.A. Toronto, department of history.
R. C. Bellan, B.A. Manitoba, department of political science.

Ramsay Wright Scholarship:—
C. J. Kerswill, B.A. Toronto, M.A. Western Ontario.

Flavelle Fellowship:—
L. P. Chiasson, B.A., B.Sc. St. Francis Xavier, department of biology.

Nipissing Mining Company Research Fellowship:—
W. E. Cavell, B.A.Sc.

Staff Appointments with reduction of fees:—168.

The financial assistance which the University gives to graduate students has been supplemented during 1939-1940 by special grants. These grants have been made by the Board of Governors on the recommendation of the Dean and the President of the University to deserving students, the amount in each case being applied in payment of fees which the student was unable to meet.

(10) REPORT OF THE DEAN OF THE FACULTY OF DENTISTRY

(Arnold D. Mason, D.D.S.)

The uncertainty in international relations during the past year has been, to say the least, disconcerting and has placed added burdens on various members of the staff. Under trying circumstances the teachers and office staff have met new conditions in a spirit of harmonious co-operation, and the high standard of instruction has been maintained.

The actual effect on the staff of Canada's entry into the war was the immediate enlistment of two whole-time members, with a part-time member signing up later. The absence of these members of the staff has entailed adjustments of duties and some new appointments.

On September 2nd, 1939, Dr. Frank M. Lott, professor of prosthetic dentistry, left for Ottawa to assume the direction of the Canadian Dental Corps and was given the rank of lieutenant-colonel, with a promotion subsequently to that of colonel. Dr. Lott was admitted to the Ph.D. degree at the June Convocation, the title of the thesis he presented being: "A Proposed Dental Service for the Defence Forces of Canada".

Professor Lott was employed for whole-time service and the following adjustments and appointments in this department have been arranged for the duration of the war. Dr. R. J. Godfrey, associate professor, was placed in charge of the department, and Drs. Ellis and Woollatt assumed additional duties in the Infirmary. Drs. Ante, Cole, Duff and Sheldon, part-time members of the staff, have been appointed for additional teaching hours, and the following new appoint-

ments were made for part-time service: Drs. A. M. Hord, J. G. Perkin and T. N. Scott.

On September 30th, the secretary of the faculty, Mr. Colin C. Rous, B.A.Sc., was appointed with the rank of major for duty in the Canadian Dental Corps. During his absence more responsibility has been assumed by his assistant, Miss Ward, and another clerk was appointed to help with the routine work. The instruction which Mr. Rous had given to students in Dentistry and in Dental Nursing on the principles of accounting has been undertaken by Mr. Wm. E. Secord, A.B., and Miss A. Lougheed.

Dr. Douglas M. Tanner who was clinician at the Toronto General Hospital for dental students joined the Corps in May, receiving the rank of lieutenant.

These three members of the faculty were granted leave of absence for the duration of the war.

Judge Hosking, B.A., B.D., had for many years given a brief course in public speaking to senior students but owing to the pressure of duties since he assumed the secretaryship of the National Y.M.C.A., he has been forced to sever his connection. The Faculty regretted very much that the students were deprived of his capable and stimulating instruction. Mr. G. A. McMullen, B.A., of Emmanuel College, has been appointed to give this course.

During the year the library and reading room facilities have been used to the limit of their capacity both by the staff and students. Owing to her marriage Mrs. Stephen resigned from her position as assistant librarian and Miss Hilda Reid, M.A., has been appointed in her place. Miss Reid is also a graduate of the Library school of this University.

The enrolment of students in the regular dental course was 243, an increase of 13 over the previous year. The 56 students of the fifth year were admitted to the degree of Doctor of Dental Surgery. Nineteen of these had previously graduated from other dental colleges, seventeen being from Australia, one from England and one from the United States. Four graduates of the Toronto Faculty of Dentistry were registered to proceed to the degree of Bachelor of Science in Dentistry. Seventeen young women were in attendance in the course in dental nursing and fifteen of them were awarded the diploma.

Active and enthusiastic interest was shown by the students in the Canadian Officers' Training Corps. Twenty-seven members of the graduating class and twenty-six members of the fourth year took this training, while twenty-two students of the earlier years were enrolled in the two-year course.

To commemorate the eightieth anniversary of the birth of the late Dr. C. N. Johnson, his daughter, Mrs. J. R. Dewson, presented to this faculty a bronze plaque for award to the student in the graduating class who obtained the highest standing in operative dentistry.

Six graduates attended refresher courses for about one week each at different times during the session. These courses were adapted to the individual needs of the applicant, taking into consideration his education and experience.

The Board of Directors of the Royal College of Dental Surgeons of Ontario very generously augmented the appropriation of the University to send lecturers to various dental societies throughout the province. This made it possible to have seventeen members of the faculty appear before dental groups to give lectures and clinics at twenty-five centres.

A celebration of the Centenary of the establishment of the first dental school in America at Baltimore, Maryland, for the organised teaching of dental students, was held in that city on March the 18th, 19th and 20th. In the hall devoted to scientific exhibits this faculty had an exhibit showing the contribution Canada is making to the profession of dentistry and to dental education. This displayed the raw materials found and mined in Canada which are essential to the practice of dentistry. There were also large photographs showing the part taken by this University in teaching dental students and in rendering dental services to the people of Canada, even to those living in the extreme frontiers of the Dominion.

On March 15th and 16th, prior to the Baltimore meeting, the American Association of Dental Schools held its convention at Philadelphia. This faculty was represented by Drs. Krueger, Godfrey, Spinks and myself. At the time I presented a report of the Committee on Dental Care and Internships in Hospitals. I believe that this convention not only keeps the members of the faculty who attend in touch with advanced thought in dental education but acts as a stimulus to the work of the faculty as a whole.

Owing to the enlistment in the Canadian Dental Corps of a considerable number of graduates in practice for some years, there are more opportunities than usual for private practice for the members of this year's graduating class, either to take over the practices for the duration of the war, often with prospects of a partnership later, or to obtain the practice outright. Preference in enlistment in the Canadian Dental Corps is given to experienced dentists and an ample number of these are offering their services.

(11) REPORT OF THE DIRECTOR OF THE SCHOOL OF HYGIENE

(R. D. Defries, M.D., D.P.H., Acting Director)

In presenting the report of the School of Hygiene last year, reference was made to the illness of Dr. J. G. FitzGerald, director of the School. Following an extended period of treatment and rest, he returned home in April greatly improved in health. His strength, however, failed and following an acute illness, he passed away on June 20. In his passing, the School of Hygiene has suffered a most grievous loss and the whole cause of public health in Canada has been deprived of one of its outstanding leaders.

It is appropriate here to speak particularly of his contribution to graduate instruction in preventive medicine culminating in the organisation of the School of Hygiene. Returning to the University in 1913 as associate professor of hygiene, he brought a vision not only of what might be accomplished through research and the preparation and distribution of essential public-health biological products for use in the control of certain communicable diseases, but also of the necessity for more adequate undergraduate instruction in preventive medicine and the provision of graduate courses. These desiderata were so closely related that the attainment of each has been dependent to a considerable extent on the successful attainment of the others. It is because of this fact that the Connaught Laboratories, of which he was the founder and director, and the departments of the School of Hygiene have become more and more intimately related as the years have passed.

The establishing of the School of Hygiene through the munificence of The Rockefeller Foundation in 1924 manifested the confidence of this Foundation and of the University in his ability and judgment. Dr. FitzGerald organised the School of Hygiene as an institution serving the whole of Canada, providing a broad fundamental training for those assuming responsibility for leadership in public-health matters, as well as affording opportunities to those who desired training in highly specialised fields. The resultant contribution will be realised more and more as the years pass. The fact that today there are more than 200 physicians who have qualified for a diploma in public health and are serving in executive and administrative positions in federal, provincial and municipal departments of health in Canada is evidence in itself of the extent to which the facilities of the School have already been used.

The place of research in the development of the School of Hygiene was never lost sight of by Dr. FitzGerald. The unique inter-relationship which he evolved between the School of Hygiene and the Connaught Laboratories has made possible the conduct of many research studies which ordinarily could not have been undertaken in the departments of the School. This inter-relationship has

also permitted the School of Hygiene to have findings in special fields of study presented to students by outstanding research workers employed in the Connaught Laboratories. Those who have studied the work of the School of Hygiene have been greatly impressed by its success and appreciate that it is a result of the vision of Dr. FitzGerald.

It was Dr. FitzGerald's recognition of the desirability of aiding provincial health departments in the training of public-health personnel by providing fellowships in public health that led the Connaught Laboratories to adopt a policy of providing such fellowships. This action of the Connaught Laboratories supplemented the highly important contribution made by The Rockefeller Foundation through the granting of similar fellowships.

In 1939-40, twenty candidates enrolled in the course leading to the diploma in public health and constituted the largest class since the inception of this course in 1912. The following provinces were represented: Nova Scotia, Quebec, Ontario, Manitoba, Alberta and British Columbia. Twelve of the candidates held fellowships in public health granted by The Rockefeller Foundation and three held Connaught Laboratories fellowships in public health.

As in former years, the departments of the School of Hygiene provided opportunities for graduate students proceeding to higher degrees and also provided instruction to undergraduate students. The number of students receiving instruction in the departments of the School of Hygiene was as follows:

A.	*Graduates*	
	Candidates for Diploma in Public Health	20
	Candidates for degree of Ph.D.	3
	Candidates for degree of M.A.	4
	Candidates for degree of M.S.A.	4
B.	School of Nursing	78
C.	*Undergraduates*	
	Faculty of Medicine, 5th year	137
	Faculty of Household Science, 2nd and 3rd years	29
	Faculty of Arts, 2nd, 3rd and 4th years	105
	Second-year Pharmacy	131
		511

During this year, the Ontario Department of Health established regulations pertaining to qualifications for medical officers of health and other public health personnel. It now requires that medical officers of health being appointed to full-time positions must hold a diploma in public health or other specific qualification. For those serving on a part-time basis in municipalities having a population of 4,000 or more, provision of suitable courses of instruction has been arranged through the co-operation of the School of Hygiene and the Department. The first of these courses was conducted throughout the period of five weeks between May 20 and June 21. Provision has also been made that medical officers of health may take the work of one term of the course leading to the diploma in public health in lieu of attending the five-week course. This provision makes it possible for health officers to extend the work of the complete graduate course over more than one academic year. For health officers of municipalities of less than 4,000 population, attendance at a course of shorter duration is required. The first of these courses was given in June in conjunction with the meeting of the Ontario Health Officers Association.

Realising the desirability of expanding the facilities of the School of Hygiene through the provision of a field-training centre, The Rockefeller Foundation and the Ontario Department of Health have jointly provided funds for a preliminary study and possible establishment of such a training centre. Dr. William Mosley, one of the members of the senior staff of the Ontario Department of Health has been granted leave of absence for a year to assume the direction of field training of graduate students in public health in the School of Hygiene and to conduct a preliminary investigation of the possibilities of a field-training centre. Miss

Eleanor Wheler, Reg.N., has been appointed as a member of the staff of the School of Hygiene to be associated with Dr. Mosley in these studies. This action of the Ontario Department of Health and The Rockefeller Foundation is most significant. It is evidence that the need for a field-training centre in connection with the School of Hygiene and the School of Nursing has been fully appreciated. The difficulties in organising and establishing such a centre are very real and only after careful study can its possibilities be determined.

The growth of the School of Hygiene has resulted in an urgent need for the appointment of additional members to the teaching and research staff. Following a careful study of needs and resources, The Rockefeller Foundation has generously provided for a period of three years the funds necessary to permit of the appointment of a senior member in the department of physiological hygiene and of a senior member in the department of epidemiology and biometrics as well as a research fellow. This grant has facilitated the arrangements whereby the School of Hygiene has assumed additional responsibilities incurred through the providing of special courses for part-time health officers.

In each of the departments of the School of Hygiene, studies and investigations have been carried on as usual. Dr. D. T. Fraser has outlined in his report to the Dean of the Faculty of Medicine the studies in the department of hygiene and preventive medicine. In the department of epidemiology and biometrics, a survey of deaths from diabetes in Ontario was completed and published by Dr. Defries, Dr. Mary Ross, and Dr. A. H. Sellers. Dr. Ross made a particular study, at the request of the Dominion Council of Health, of the form and content of the statistical data as presented in the reports of the registrars-general of the various provinces. It is expected that specific recommendations will be made as a result of her findings. Details of the studies conducted in the department of physiological hygiene under the direction of Dr. C. H. Best, as well as investigations in the sub-department of chemistry in relation to hygiene under the direction of Dr. P. J. Moloney, are presented in the report of the director of the Connaught Laboratories because of the fact that grants are made by the Connaught Laboratories for the support of these studies.

(12) REPORT OF THE LIBRARIAN

(W. S. Wallace, M.A.)

I beg to submit the following report on the work of the University Library for the year ending June 30, 1940.

The number of volumes added to the Library during the year has been ~~13,638~~, and the number of pamphlets ~~3,049~~, making the total number of accessioned volumes in the Library ~~381,918~~, and the total number of pamphlets ~~143,549~~ —or a grand total of ~~508,780~~.

The following are the statistics of the use of the Library by undergraduates in comparison with previous years:

	1921-22	1926-27	1934-35	1938-39	1939-40
Reading-room books....	41,928	106,485	186,605	195,869	188,886
Over-night books.....	18,998	39,779	107,559	102,233	93,387
Week books.....	4,782	13,104	23,399	21,247	18,722
Totals.....	65,718	159,278	317,541	319,349	300,995

The following is a statement showing the circulation in the medical, political science, University College, and law reading-rooms during the year, in comparison with other years:

	1934-35	1935-36	1936-37	1938-39	1939-40
Medical reading-room					
Reading-room books....	10,761	11,195	12,814	12,145	12,949
Over-night books.....	11,386	12,219	12,425	10,755	8,447
Week-books.....	3,606	3,622	4,188	2,941	2,257
Totals.....	25,753	27,036	29,427	25,841	23,653

	1934-35	1935-36	1936-37	1938-39	1939-40
Political Science:					
Reading-room	12,567	11,208	9,088	10,158	9,197
Over-night	6,890	6,338	4,865	5,484	4,569
Totals	19,457	17,546	13,953	15,642	13,766
University College:					
Reading-room	33,325	30,746	30,992	27,275	23,079
Over-night	17,943	16,466	15,923	12,005	9,428
Week-books	.....	.....	.....	649	675
Totals	51,268	47,212	46,915	39,929	33,182
Law reading-room:					
Reading-room	8,822	15,585	22,985	29,242	25,762
Over-night	2,870	4,368	4,004	4,657	3,838
Week books	251	524	373	442	205
Totals	11,943	20,477	27,362	34,321	29,805

The following is a statement showing the total circulation in the Library during recent years:

	1925-26	1934-35	1936-37	1938-39	1939-40
To undergraduates	159,278	317,541	341,086	319,349	300,995
To professors and graduates	20,000	40,843	39,437	41,439	42,424
Totals	179,278	358,384	380,523	360,788	343,419

These figures, it should be explained, are exclusive of reference books, of which ~~over~~ 30,000 have been replaced on the shelves by the library assistants in the main library during the past year; and of course they take no account of the very considerable circulation of books in some of the departmental libraries.

The decline in the circulation of books among undergraduates, which is ~~slightly more than five~~ per cent., is to be explained without doubt by wartime conditions, which have made exceptional demands on the time of undergraduates, both in military training and in voluntary war work. Under the circumstances, it is surprising that the decrease in circulation was not larger.

There has been an increase in the number of interlibrary loans, the library having handled this year ~~923~~ as against ~~850~~ last year. Of these, ~~584~~ were books lent, and ~~339~~ books borrowed. During the year the binding and mending department has prepared for binding ~~3,950~~ volumes, mended ~~1,820~~ volumes, and placed in pamphlet binders or boards, ~~1,233~~ volumes. During the year there were filed in the depository set of the Library of Congress cards a total of ~~119,580~~ cards.

The University Library has been profoundly affected by the war in several ways. The outbreak of the war cut off immediately the flow of German books and periodicals; and though an attempt was made during the winter to obtain for university and research libraries German scientific periodicals considered essential to university work, this arrangement has been rendered abortive by the course of events. Recent months have seen the stoppage of books and periodicals from Norway, Denmark, Holland, Belgium, France, and Italy, so that we are now receiving very little from continental Europe. It is probable that our German agent is keeping up our subscriptions to German periodicals, since he did this during the last war; and I have had a letter from our Italian agent telling me that he proposes to do the same. Elsewhere in Europe, it is probable that large numbers of periodicals are being discontinued.

Shortly after the outbreak of war, the Librarian was asked by the President to take the position of Chairman of the War Service Advisory Board of the University, and a part of his duty during the year has been to interview numerous undergraduates and graduates who came to him for information and advice.

Among acquisitions made by the Library during the past year, the most notable has probably been that of the admirable collection of books made by the late Mr. John C. Saul of Toronto, relating to the English poets of the nineteenth century, and notably Tennyson, Keats, and Shelley.

(13) REPORT ON RESEARCH

Anatomy, under direction of Professor J. C. Boileau Grant

During the last ten years the head of the department has been collecting data on a large number of selected anatomical variables with a view to contributing (*a*) towards placing descriptive anatomy on a statistical basis (many assertions at present made require either to be substantiated or to be modified in the light of ascertained facts) and (*b*) towards observing the age incidence of certain progressive structural changes. In many instances sufficient data have now accumulated to allow authoritative statements to be made. The head of the department has investigated the age incidence of osteophytic growths (physiological or pathological) in a large series of vertebral columns of proved age and is correlating these with similar bony growths occurring elsewhere.

Dr. C. G. Smith, working with the data collected, has shown that the age incidence of perforation of the articular disc of the wrist joint increases steadily from 25 per cent. at 35 years of age to 50 per cent. at 75 years of age. Dr. Smith has also studied the influence exerted by sensory impulses from muscles on the response to pain on electrically stimulating the cerebral cortex, and he has located within the spinal cord of the dog the path followed by impulses eminating from the forelimb. He has also devised a method of mounting cross sections in permanent form.

Dr. H. L. Foster has investigated the asymmetry of the inclination of the articular processes in a large series of vertebral columns. He has also investigated the minute structure of the annulus fibrosus of the intervertebral discs.

Dr. E. G. Meyer has succeeded in tracing branches of the intercostal and lumbar nerves to the intervertebral discs and to the posterior longitudinal ligament.

Dr. B. L. Guyatt has investigated the relations of the spinal nerves to the intervertebral discs and to the joints of the articular processes.

Mr. H. C. Elliott, Richardson Research Fellow, is plotting the cell group in the anterior column of the spinal cord, and is making a valuable contribution to this problem.

Under direction of Professor A. W. Ham:

Dr. A. W. Ham and Miss Merritt, with the assistance of a grant from the National Research Council, find that the response described as specific for urine from cancer patients is not so, but is due to a pituitary principle normally present in the urine of older persons. Dr. Ham has continued his work on arteriosclerosis in rats resulting from the administration of activated ergosterol. Dr. Ham, in collaboration with Dr. Haist, has undertaken an extensive histological study of the effects of injecting a diabetogenic anterior pituitary extract into dogs for varying lengths of time. This study, undertaken at the request of Dr. Best, has yielded a considerable amount of information regarding the pathogenesis of diabetes.

Miss V. Ryder, with the assistance of a grant from the National Research Council, is investigating the tissues of animals suffering from prolonged phosphorous deficiency.

Mr. G. Eidt, with the assistance of a grant from the Banting Research Foundation, is studying the effect of injections of growth hormone on the fractured bones of older animals to see if they speed the process of repair.

Applied Mathematics, under direction of Professor J. L. Synge

L. Infeld, Ph.D.: Work was continued on the problem of motion in general relativity theory. New methods were developed for treating the problem of fluctuations and Brownian motion.

A. F. Stevenson, Ph.D.: A contribution was made to the theory of the magnetic beams resonance method of determining magnetic moments. Certain points arising in the quantum-mechanical theory of transitions were investigated.

J. L. Synge, Sc.D.: A direct investigation has been made of the loss of energy in the electromagnetic two-body problem, the Lorentz ponderomotive force being accepted in the equations of motion. A modification in the usual form of energy-tensor for an electromagnetic field has yielded a consistent theory of the conservation of momentum and energy for a system of charged particles.

P. R. Wallace, Ph.D.: The development of equations of motion of charged particles from field equations has been extended to the many-body problem, and under certain physically justifiable assumptions these equations of motion have been obtained in closed form.

Astronomy, under direction of Professor R. K. Young

General Programme

Two general programmes of observation for radial velocities are under way. The first of these extends the Kapteyn Areas to 6 x 6 degrees square north of declination −10 degrees and the second programme comprises all stars brighter than 6.00 visual magnitude north of −10 degrees for which no velocities are as yet published. 713 plates have been secured on these two programmes and the measurement and reduction has so far kept pace with observation that only about 100 plates remain to be measured. 724 plates were measured on these programmes during the year: Mr. Bunker, 227; Mr. Buscombe, 204; Mr. Tidy, 172; Miss Northcott, 121. All the members of the staff have co-operated in the observation of these stars.

Special Researches

Mr. A. F. Bunker, under the direction of Dr. Hogg, has carried out an investigation of seven peculiar strontium stars. This work was prosecuted by Mr. Bunker as part of the requirements for the Master's degree. Results of considerable interest were obtained and will be published. In general the peculiar stars have been found to be cooler than comparison stars of the same general spectral type.

Dr. J. F. Heard has completed the orbit of H.D. 9312 and investigations on the velocity variations of H.D. 142926. 139 plates were secured of stars of type Be. The velocity of 8 stars suspected of being of the β Canis Majoris type are being investigated. 150 plates were measured in connection with these researches.

Dr. F. S. Hogg has continued observations of Z Andromedae and of several binaries mentioned in last year's report. 40 plates were secured at the Newtonian focus for a continuation of the studies in colour, magnitudes and polarization in galactic nebulae. A new instrument to assist aerial navigation has been designed and constructed. Dr. Hogg has continued to act as assistant editor of the Journal of the Royal Astronomical Society of Canada.

Dr. Helen S. Hogg has determined periods for 3 variables in the Hercules cluster (N.G.C. 6205) and checked the period of another variable determined 30 years ago. These variables comprise 3 long-period Cepheids and one cluster type and may be considered the most important periods yet determined in any globular cluster. Several years ago approximate periods were determined for 33 variables in the cluster N.G.C. 6934. Much time has been spent the past year in computing these over an interval of 25 years, to the 6th decimal place and 41 periods are now known (out of 51 variables in this cluster). Work has been started on searching the Arizona plates with a new blink microscope for new variables. About 12 have been located so far and there are good prospects

for many more. During the year 76 plates were secured at the Newtonian focus of the 74-inch telescope.

Dr. P. M. Millman has continued his observation of faint eclipsing binaries; up to the present 97 plates of 18 different stars have been secured. 51 of these were taken during the past year. Meteor photography of the chief meteor showers was successfully carried out, utilising at the D.D.O. the new multiple camera mounting with rotating shutter. 2 spectra and 13 direct meteor photographs were secured at the Dunlap Observatory and 2 spectra and 60 direct photographs were secured at co-operating stations. A trip was made to the district between London and Windsor for the purpose of collecting information concerning the Dresden meteorite which fell in July 1939. The air path of this object and its orbit about the sun were computed from about 100 visual observations. Considerable time has been spent in the dark room investigating a new fine grain development.

Biochemistry, under direction of Professor H. Wasteneys

Directed by Professor Wasteneys:

Mrs. Jeanne Manery Fisher, assisted by Mr. S. J. Slinger, has been engaged in attempts to solve the general problem of the distribution of electrolytes in tissues under different conditions. To this end she has improved recognised methods for the determination of small amounts of sodium, potassium and chlorine. The electrolyte changes in embryonic development were studied in fish eggs and some information was also obtained on the permeability and electrolyte content of the egg membranes.

Preliminary studies were made on the diffusibility of chloride and potassium, under certain conditions, from the wall of the gastro-intestinal tract.

The electrolyte changes in the tissues of scorbutic animals (guinea-pigs) were also investigated.

Mr. B. F. Crocker and Dr. Paul Hamilton have continued their work on the use of deuterium in the determination of the extent of protein digestion at different situations in the gastro-intestinal tract. Having devised improvements in the method of accurately measuring small amounts of deuterium they have subjected deutero-protein to peptic hydrolysis in vitro and have determined that deuterium and nitrogen are similarly distributed between the unhydrolysed protein and the soluble products of hydrolysis. They have thus proved that deuterium may be used to label ingested protein and to distinguish between the products of digestion of ingested and secreted protein in the digestive tract.

Directed by Professor A. M. Wynne:

Miss M. Biehn and Miss E. Macpherson have been engaged in an investigation of the synthesis of polysaccharides and lipids by yeast. During the past year Miss Biehn has held a studentship of the National Research Council.

Miss M. Chernovsky and H. Z. Sable have continued the study of the properties and formation of phosphatase in the intestinal mucosa of rats and mice.

Mr. M. Freed has completed his study of the synthesis of glycerides by pancreatic lipase.

J. P. Harshman and C. G. Stewart have made a critical study of the kinetics of the hydrolysis of tripropionin by pancreatic lipase, in relation to the recent theories of Medwedew.

F. L. Root has continued the investigation of toxin production by *C.* diphtheriae.

W. C. Stewart has investigated the energy of activation of the system pepsin-egg albumin.

J. Tuba and I. Motzok have continued the investigation of the properties and formation of phosphatases by different species of yeast.

Directed by Professor L. Young:

Mr. A. D. Barton has been engaged in the study of the chemistry of the aryl hydrogen sulphates. The synthesis of these compounds has been investigated, and a new method for the preparation of their derivatives with organic bases has been developed. This work has been undertaken in order to pave the way for a biochemical investigation of the formation of aryl hydrogen sulphates in the animal body.

Dr. L. Young and Miss A. Britton have made a study of the metabolism of the polycyclic hydrocarbon, phenanthrene. From the urine of animals to which this compound has been administered it has been possible to isolate two crystalline derivatives of phenanthrene. A study of the chemical constitution of these compounds has been undertaken. Evidence has also been obtained which suggests that the urine of animals receiving phenanthrene contains at least two other derivatives of this compound besides those already isolated. Dr. L. Young has continued his study of the structure of a naphthalene derivative which he isolated from the urine of rabbits receiving naphthalene.

Biology, under direction of Professor E. M. Walker

Animal Bionomics and Ichthyology

Professor A. F. Coventry—Continued studies of populations of small mammals in Ontario, including further observations on small mammal habitats in the Temagami area. An investigation was made of the present condition of the streams of about 1300 square miles of southern agricultural Ontario, demonstrating a serious diminution of the amount of water available in summer.

Under the direction of Professor A. F. Coventry:

D. A. Ross—Preliminary studies on the ecology of the Lesser Scaup Duck.
V. E. F. Solman—Preliminary studies on the ecology of the Mallard Duck.
Professor J. R. Dymond—Taxonomy and distribution of Coregonidae of the Northwest Territories.

Under the direction of Professor J. R. Dymond:

A. H. Carter—Ecology and life-history of *Nocomis biguttatus*.
W. A. Kennedy—The Whitefish of Lake Opeongo.
Mrs. Isobel Radforth—Distribution of fishes in Ontario.
D. G. Wilder—Relationship of land-locked or lake salmon to migratory Atlantic salmon.

Comparative Neurology

Professor E. H. Craigie—Detailed study of the cerebral cortex in the Tinamidae and a general survey of cortical structure in the living orders of birds; quantitative study of vascularisation in the brain of Necturus and in the hypothalamus of the rat; distribution of the principal cerebral arteries in various birds and consideration of its bearing upon the homologies of some of the areas supplied; morphology of the cerebral capillary bed in Dermophis and its possible phylogenetic significance.

Under the direction of Professor E. H. Craigie:

S. P. Drummond—Vascularity of the brain of the frog in hibernation.

Experimental Biology

Professor K. C. Fisher—Effect of temperature on the critical oxygen tension of speckled trout embryos. The "drop frequency announcer" constructed for the General Hospital at the request of Dr. D. W. G. Murray has been redesigned and the new model is now in regular use.

Professor K. C. Fisher and Dr. Paul Elson—Relation between the "preferred" temperature of fish and the distance moved in response to stimulation.

Professor K. C. Fisher and Mr. J. Stern—Effect of the narcotic urethane on the respiration of yeast cells.

Professor K. C. Fisher, assisted by Mr. J. E. Moore—Preliminary examination of factors concerned in the formation of the perivitelline space in teleost eggs.

Under the direction of Professor K. C. Fisher:

C. W. J. Armstrong—Chemical reactions concerned with rhythmicity in the frog heart; effects of azide and cyanide as inhibitors of cell respiration.

K. Graham—Chemistry of respiration in the overwintering codling moth.

Miss R. Martin—Viability of embryos after cyanide poisoning including an examination of the circulatory conditions.

W. B. Stallworthy—Ecological significance of environmental factors such as temperature, humidity and light, for land isopods of the Toronto region. (Nearly completed.)

Miss G. Workman—Correlation between the preferred temperature and the response to stimulation at different temperatures in tadpoles of the leopard frog.

Genetics and Human Biology

Professor J. W. MacArthur—Cytogenetics of tomatoes and related wild species; studies of size inheritance and selection; chromosome numbers in woodpecker species.

Professor J. W. MacArthur and Dr. A. R. Dafoe—Growth in weight and stature of the Dionne quintuplets (published).

Professor J. W. MacArthur and Dr. W. E. Castle (University of California)—Linkage of the gene controlling hereditary jaundice in rats.

Professor J. W. MacArthur, Dr. D. L. Bailey and Dr. A. N. Langford—Introduction at Vineland Horticulture Experiment Station of the commercial greenhouse tomato, "Vetomold".

Under the direction of Professor J. W. MacArthur:

H. R. Boyce—Genetic studies of two closely related forms of the braconid genus Ascogaster, hymenopterous insects parasitic on pea, codling and oriental peach moths.

Miss V. E. Engelbert—Reproduction and cytogenetics of species of blue grass (Poa).

Mrs. F. H. Miller—Comparison of human foot and hand prints.

G. S. Swain—Tetraploidy and its cytology in species crosses of tomato and egg-plant.

A. Wilkes—Causes and control of variations of sex ratio in *Microplectron, fuscipennis*, a hymenopterous parasite of the European Spruce Sawfly.

Professor Norma Ford—A study of disturbance of growth, as indicated by dermal configurations, in 200 parents and siblings of mongoloids (in co-operation with several Ontario and New Jersey hospitals); Primogeniture as an aetiological factor in pyloric stenosis, based on a review of more than 400 cases, including a study of 12 pairs of twins (in co-operation with the Hospital for Sick Children; two papers ready for press). Investigation of the blood vascular system in the placentae of multiple births (in co-operation with four Toronto hospitals).

Professor Norma Ford and Miss S. Frumkin, (Northern New Jersey Mental Hygiene Clinics)—A biological study of a pair of monozygotic mongoloid twins.

Professor Norma Ford and Miss Grace Workman—Continuation of study of disturbance in growth during early foetal months in mongoloid imbeciles.

Invertebrate Zoology (including entomology)

Professor E. M. Walker—Exoskeleton and musculature of abdomen of Grylloblatta (nearly completed); preliminary studies of alimentary canal, reproductive organs and nervous system of Grylloblatta; taxonomic and faunistic studies of Canadian Odonata.

Under the direction of Professor E. M. Walker:

G. M. Neal—Taxonomic and ecological studies of Canadian rotifers.

H. H. J. Nesbitt—Taxonomy of mites of the family Tyroglyphidae infesting stored grain.

R. W. Thompson—Influence of temperature, moisture and light on the Red Spider (*Tetranychus tellarius* L.).

F. A. Urquhart—Ecological and taxonomic studies of Ontario grasshoppers and crickets, with special reference to Essex County.

Limnology (Ontario Fisheries Research Laboratory, under the direction of Professor W. J. K. Harkness)

Professor W. J. K. Harkness—Studies of Trout in the lakes and streams of southern Ontario.

Under the direction of Professors E. H. Craigie and W. J. K. Harkness:

J. S. Hart—Cardiac output of freshwater fish.

Professor F. P. Ide—Emergence of aquatic insects from one square yard of stream surface.

Under the direction of Professor F. P. Ide:

W. M. Sprules—Distribution of aquatic insects in a stream in Algonquin Park.

Dr. F. E. J. Fry with Mr. E. C. Black and Dr. W. J. Scott of Swarthmore College—Respiration of fishes.

Dr. F. E. J. Fry, assisted by W. A. Kennedy, J. S. Hart and J. R. Brett—Analysis of factors limiting populations of game fish.

Dr. R. R. Langford—Continuation of investigation of comparative methods of plankton collection.

Dr. R. R. Langford, assisted by W. R. Martin—Distribution, movements, food relations and growth of the perch in Algonquin Park lakes.

Dr. D. A. Maclulich of the Department of Lands and Forests—Parasites of trout in Algonquin Park.

Dr. R. V. Bangham, Wooster College—Parasites of fish (excepting trout) in Algonquin Park.

Three buildings: a physiological laboratory, dining room and dormitory, were constructed and equipped in co-operation with the Ontario Department of Lands and Forests. In collaboration with the Department of Lands and Forest and the Department of Game and Fisheries a programme of experimental management of game fisheries of Algonquin Park is being carried on.

Marine Biology

Professor A. G. Huntsman—Death of salmon at high temperatures; factors determining distribution of salmon in the sea; factors influencing salmon movement.

Under the direction of Professor A. G. Huntsman:

Dr. P. F. Elson—Continued work on effect of temperature on trout movement.

C. J. Kerswill—Environmental factors influencing the growth and distribution of *Venus mercenaria:* distribution of Pteropods of eastern Canada and Newfoundland.

Dr. H. M. Rogers—Retention of plankton in an estuary, factors influencing numbers and distribution of the smelt.

G. C. Whiteley, Jr.—Significance of differences between local populations of cod.

Mr. H. C. White of the staff of the Atlantic Biological Station, St. Andrews, N.B., was given accommodation from January to March inclusive for the study of (1) life history of the sea-running brook trout (*Salvelinus fontinalis*), (2) *Lepeophtheirus* and death of salmon, (3) fish-eating birds of the Moser river, N.S., and (4) redds and fry production for salmon in Moser river.

Vertebrate Anatomy and Embryology

Professor W. H. T. Baillie—The general and ocular behaviour pattern in response to light in vertebrate animals; developmental and functional forces acting on the abdominal musculature of mammals.

Under the direction of Professor A. F. Coventry:

Miss A. M. Ironside—Study of the corpora lutea of *Peromyscus* with special reference to the correlation of the several generations of corpora lutea that are often found in the ovaries of this mouse with the number, frequency and season of pregnancies (completed).

R. R. Logie—Limiting factors in the development of fish, especially of the Atlantic salmon. This season his work has dealt only with temperature.

Botany, under direction of Professor R. B. Thomson

I. Phanerogamic Botany and Genetics

Anatomy and Experimental Morphology

Bannan, M. W.—(1) Variability in wood structure in roots of native Ontario conifers.
(2) The wood structure of Thuja.

Haldenby, C. N.—The origin and distribution of horizontal resin canals in *Larix laricina*.

Moore, Miss Ruth H.—The structure of the cone of Equisetum.

Radforth, N. W.—The structural features of the fructifications of carboniferous fern-like plants.

Thomson, R. B.—(1) The comparative anatomy of the male and female cone scales of the conifers.
(2) A mucilaginous layer in the pollen grain of the conifers and its connection with "wing" formation.

Thomson, R. B. & Hull, Miss Kathleen L.—The organisation of the sporeling of Osmunda and of the lower vascular plants.

Taxonomy

The total number of specimens identified, mounted, stamped, recorded and actually distributed in the herbarium during the year was 3,094. The total number of sheets in the Herbarium is now 50,795.

Taylor, T. M. C.—(1) A critical study of the genus *Woodsia*.
(2) Plant survey work in the Peninsula area, in co-operation with the National Museum of Canada. Reports dealing with the plants of the Michipicoten area are in course of preparation.

Genetics

Wright, Miss J. Gertrude—A study of abnormal flowers of *Linaria vulgaris* and their inheritance.

II. Mycology, Forest Pathology and Cryptogamic Botany

(Under the direction of Professor H. S. Jackson)

Cain, R. F.—(1) A taxonomic study of Ontario Sordariaceae and related Sphaeriales.
(2) The mycological flora of Oxford and Brant Counties, Ontario.

Jackson, H. S.—(1) The mycological flora of the Toronto region, the Temagami Forest Reserve and of Algonquin Park.
(2) A taxonomic study of Thelephoraceae in Canada.
(3) A study of North American species of Corticium and Peniophora.

Lehmann, A. J. V.—A study of the nuclear phenomena of the germination of teliospores of certain species of Lepto-Puccinia.

Macrae, Miss Ruth—A study of phosphorescence in *Panus stipticus*.

Skolko, A. J.—A cultural and cytological study of Aleurodiscus.

There have been 3,980 collections added to the Mycological Herbarium during 1939-40, and the collection now totals 71,272 specimens.

During the year the arrangement of the collections of Bryophytes has been completed. The herbarium of Bryophytes (Liverworts and mosses) now numbers 7,680 specimens.

III. Plant Ecology and Seed Studies

(Under the direction of Professor H. B. Sifton)

Structural Ecology

Facey, Miss V.—Abscission of leaves in deciduous plants and evergreens.

Sifton, H. B.—Leaf development in Labrador Tea.

Watson, W. R.—Developmental studies of leaf structure as related to light.

Seed Studies

Hamly, D. H.—(1) New apparatus for the investigation of light relationships in seeds.
(2) Stereo-photomicrography of seeds.

McGugan, Miss J.—Identification of seeds and seedlings of the Genus Brassica.

Sifton, H. B.—Effects of temperature, light, water and oxygen supply on the germination of Typha seeds.

IV. Plant Physiology

(Under the direction of Professor G. H. Duff)

Clendenning, K. A.—Metabolism of the tomato fruit in relation to its storage. It has been shown that Walford's anomalous physiological type owes its durability to restriction of the fruits' gaseous exchange and that fruits grown at all seasons of the year may very simply be brought into this state. Studies of carbohydrate, acid and protein metabolism during growth and storage continue, the work of the last twelve months being done in the laboratories of the Department of Horticulture, Ontario Agricultural College.

Duff, G. H. & Forward, Miss D. F.—Continuation of work on several chapters of the series of studies in the metabolism of the standard wheat leaf.

Goulding, Miss H. J.—The effect of temperature upon the respiration record of the standard wheat leaf. The modifications induced by temperature have been examined at intervals of 5°C. throughout the range 2.2°C. to 32.2°C. New light has been thrown on several problems previously under consideration in this laboratory.

Stephen, W. A.—The thermal properties of common osmophilic yeasts. A number of species, isolated from honey, have been compared in respect of their tolerance, in media of very high osmotic pressure, of high and of very low temperatures.

Ward, G. M.—Carbohydrate and protein metabolism of tobacco leaf during growth and curing.

V. Plant Pathology

(Under the direction of Professor D. L. Bailey)

Except where otherwise stated, these researches are being carried on in co-operation with the Vineland Horticultural Experiment Station.

Bailey, D. L.—(1) Strawberry root-rot.
(2) Disease of ornamentals.
(*a*) Suspected virus diseases of lilies and gladiolus.
(*b*) Physiological specialisation *Cladosporium fulvum*. As the culmination of Dr. Langford's researches with this fungus, a new greenhouse tomato variety, called Vetomold, was introduced last year. While in general this variety has been enthusiastically received, it became infected in a limited number of localities. It is imperative therefore to study more intensively the precise number and pathogenic capabilities of the parasitically specialised strains of *Cladosporium fulvum*. Dr. Langford, who is now located at Bishop's University, will co-operate in this project.

Harrison, H. M.—Factors influencing the fungous flora of the root in selected species.

McKeen, C. D.—A "ring-spot" disease of gladiolus corms.

Mead, H. M.—A co-operative study of some seed-borne disease of barley. In co-operation with the Dominion Plant Pathological Laboratory, Saskatoon, Sask.

Richardson, L. T.—Phytophthora stem-girdle of tomato.

Simmons, S. A.—A cold storage disease of tomatoes. In co-operation with the Ontario Agricultural College.

Welsh, M.—A collar-rot of apples of apparent fungus causation. In co-operation with the Summerland Plant Pathological Laboratory.

Woolliams, G. E.—Fusarium wilt of Zinnia. In co-operation with the Dominion Plant Pathological Laboratory, Summerland, B.C.

VI. Cytology

(Under the direction of Dr. L. C. Coleman)

Coleman, L. C.—(1) The cytology of Gasteria and Gasteria X Aloe hybrids.
(2) The cytology of *Veltheimia viridifolia*, *Agapanthus umbellatus* and *Kniphofia Uvaria* with special reference to the phenomenon of differential condensation at pachytene.
(3) A study of *Trillium grandiflorum* more especially with reference to abnormal forms.

Gopalayengar, A. R.—The cytology of Scilla and related genera.

Hillary, B. B.—The investigation of chromosome structure and fragmentation in Tradescantia spp.

Chemistry, under direction of Professor F. B. Kenrick

Thirty-nine students were engaged in research work during the session 1939-40 under the direction of members of the staff of the department of chemistry.

The degree of Master of Arts was conferred on ten of these, viz.: Messrs. J. C. Bond, R. C. Carlisle, W. J. Chute, R. F. Donahoe, R. C. Downing, H. E. Gunning, W. A. E. McBryde, J. L. Myers, W. J. Rogers, H. Sheffer; also on Mr. W. N. Keefe who worked under Dr. Franks, department of Banting medical research and on Mr. J. Lee, who worked under Dr. Westman, Ontario Research Foundation.

The degree of Master of Science in Agriculture was conferred on Mr. H. A. Horton, who worked under Professor Ruhnke at the Ontario Agricultural College, Guelph.

The degree of Doctor of Philosophy was conferred on Mr. A. A. Janis, who worked under Professor Ferguson, Mr. Hollingshead whose research was done under Professor Gordon, and on Messrs. W. A. Patterson and G. E. Willey who worked under the direction of Professor Burt-Gerrans.

Dr. A. R. Gordon was appointed associate editor of the Journal of Chemical Physics.

The following were the subjects of research:

R. W. Allgood, M.A.—Transference numbers of electrolytes in aqueous solutions.

A. H. Allman—Specific organic reagents for the determination of precious metals.

Professor E. E. F. T. Baer—Reactions by means of lead tetraacetate.

Professor F. Beamish—The efficiency of the fire-assay for the determination of precious metals.

H. A. Bewick—The extraction of gold from ores with special reference to pregnant cyanide solutions.

A. M. Birks, M.A.—The geoisomeric equilibrium between stilbenes.

A. W. Birnie, B.Sc., M.A.—The adsorption of gases on solids.

J. C. Bond, B.A.—Preparation of geoisomeric chalcones, and special work for the Dominion Government.

D. M. Burpee, M.A.—The wet assay for platinum metals.

Professor J. T. Burt-Gerrans—Study of Carbon Arcs.

R. C. Carlisle, B.A.—The fire assay for platinum metals.

W. J. Chute, B.Sc.—The reactivity of furan compounds.

F. Y. Cook—The Raman spectra of some hydrocarbons related to gasoline, and special work for the Dominion Government.

I. B. Cushing, M.Sc.—The synthesis of phosphatides and phosphated acids.

J. W. Dale—Preparation of 2- and 3-furyllithium.

R. F. Donahoe, B.Sc.—Spectrographic analysis of ores bearing platinum metals.

D. C. Downing, B.A.—Scission of furfural alcohol.

Dr. Edna V. Eastcott—The determination of phosphatase in yeast.

Professor J. B. Ferguson—Vapour densities and adsorption phenomena.

L. D. Findlayson, B.A.—The solubility of carbon dioxide in binary liquids.

Professor H. O. L. Fischer—Quinic acid and derivatives, Glycerophosphoric acids, constitution of conduritol and certain cyclohexane tetrols.

Professor A. R. Gordon—Theory of electrolytes, and special work for the Dominion Government.

Dr. J. M. Grosheintz—Reactions by means of lead tetraacetate.

H. E. Gunning, B.A.—Conductance of electrolytes.

Miss I. M. B. Hannan—The identification of the alcohols adsorbed on sugar refinery charcoal wastes.

E. A. Hollingshead, M.A.—Differential diffusion constants of electrolytes, and special work for the Dominion Government.

W. J. Hornibrook, B.Sc., M.A.—Activity coefficient of potassium chloride from E.M.F. measurements.

Professor F. B. Kenrick—Determination of surface area of powders, chemistry of sour taste.
Professor F. Lorriman—The Williamson synthesis of phenolic ethers. The Diels and Alder reaction with 2, 3-dimethyl-butadiens.
E. D. Maher—The alkaloidal content of blood.
C. Marchant, M.A.—Bios.
Professor W. H. Martin—Study of Raman effect, and special work for the Dominion Government.
W. A. E. McBryde, B.A.—The sour taste of acids.
T. H. G. Michael—Spectrographic analysis for precious metals.
L. T. Munn, B.A., M.A.—Vapour pressures and vapour compositions.
J. L. Myers, B.A., B.Sc.—The racemisation of d-lactic acid.
P. Olynyk, B.Sc.—Vapour pressures of aqueous solutions of electrolytes.
W. A. Patterson, B.A., M.A.—The temperature coefficient of the diffusion of copper in copper sulphate solutions containing sulphuric acid.
Dr. J. J. Rae—Phosphatase in yeast.
H. H. Richmond, B.A.—The resolution of symmetrical diphenylbutane.
W. E. Riddolls—Viscometry in heterogeneous systems.
J. H. Robertson, B.A.—Mercuration of ethylenes, and special work for the Dominion Government.
Professor L. J. Rogers—The alkaloidal content of blood.
W. J. Rogers, B.Sc.—The fire assay of ores for ruthenium.
D. S. Russel—The precipitation of precious metals by zinc.
H. Sheffer, B.A.—An isopiestic study of aqueous sulphuric acid.
E. Y. Spencer, M.Sc.—The chemistry of lactones, and special work for the Dominion Government.
Miss J. O. Stonestreet—Quantitative determination of mercury and halogens in the presence of one another.
M. H. Thomas, M.Sc.—Kinetics of the cis-trans isomerisation of 2-butens.
W. A. Tidridge, B.A., M.A.—Photochemical and thermochemical reversible reactions. Cis-trans paraditoluylethylene.
M. Wayman, M.A.—Isolation and structure of Bios IIB.
Dr. F. E. W. Wetmore—Problems in kinetics and the design of electrical apparatus for chemical research, and special work for the Dominion Government.
G. E. Willey, B.A., M.A.—The distribution of potential in the carbon arc.
Professor G. F. Wright—Reaction of methyl Grignard reagents with verartraldehyde. Quantitative determinations of geoisomeric mixtures. Isolation of alkali insoluble Bios II B. Preparation and properties of organo-antimony compounds, and special work for the Dominion Government.

Food Chemistry, under direction of Professor C. C. Benson

In the department of food chemistry we have been carrying on research work during this session chiefly in connection with the study of Indian seeds, particularly the lentils, and with special reference to their protein content.

Two graduate students in the School of Graduate Studies have been granted their master's degree. The one candidate has been working on methods of estimating proteins, which are difficult to determine according to the methods that are commonly used; and the other has been working on color reactions for the amino acids contained in proteins.

Geology and Palaeontology, under direction of Professor E. S. Moore

Field investigations in geology:

E. S. Moore:—Geology of mines and other features in the Western States.

G. B. Langford:—The origin and nature of rock bursts, for the Ontario Department of Mines.
A. MacLean:—Geology of a section in the eastern portion of the Kirkland Lake area, for the Ontario Department of Mines.
L. S. Russell:—A study of some of the Cretaceous and Tertiary formations in Saskatchewan.
V. J. Okulitch:—Collection of materials and study of geological phenomena in British Columbia and northwestern United States.
V. K. Prest:—Geology of the Rowlandson Lake and Wunnumin Lake areas, for the Ontario Department of Mines.

Laboratory investigations:

L. S. Russell:—Study of titanotheres of the Oligocene of the Cypress hills and of dinosaur remains from the Upper Cretaceous of Saskatchewan.
The stratigraphy of the fossil fish-bearing Escuminac formation of the Upper Devonian in Quebec.
The sclerotic ring in the eye socket of the duck-billed dinosaurs.
Micrichnus tracks in the Paskapoo formation in Alberta.
M. A. Fritz:—Onondaga ostracodes from oil and gas wells in Kent county, Ont. Devonian Bryozoa from Gaspé county, Quebec.
V. J. Okulitch:—Revision of the type *Pleospongia* (Archaeocyathi) from eastern Canada.
Crinoidal markings from the Dundas formation at Toronto.

Under the direction of the staff in Geology:

C. E. Michener, B.A., M.A. (Cornell):—Minerals of large sulphide deposits of the Sudbury type.
M. W. Bartley, B.Sc. (Man.), M.A.:—Geology of the Steeprock area and the origin of the hematite deposits.
V. K. Prest, M.Sc. (Man.):—Wall-rock alteration along the veins in the Porcupine area.
R. M. Sternberg, B.A. (Queen's):—The cranial anatomy of *Eusthenopteron.*
J. H. Low, B.A. (McMaster):—Geology of the Star of the East mine and vicinity.
F. G. Smith, M.Sc. (Man.) (holder of studentship from National Research Council):—The nature of ore-forming solutions, and the electrical conductivity of pyrite.
G. T. Keeler, B.A.:—Geology at the Algold mine.
W. N. Ingham, B.A. (McMaster):—The molybdenite deposits of North America.
W. J. G. Clarke, B.A. (B.C.):—Some comparisons of the geology in the Sudbury area and the Bushveld Complex.

Household Science, under direction of Professor J. B. Brodie

Miss M. T. Mathew has studied the problem of consistency of doughs as affected by type of baking powder, a part of a larger problem on baking tests.

Miss J. E.Young has continued her work on individual taste perception. She has determined the threshold values of the four taste qualities of over one hundred and fifty students in this department. From these results a scale with which to test an individual's taste sensibility has been devised. By this means individuals can be rated as normal, above normal or below normal. It is proposed to use this scale for testing taste sensitivity of all students in this department. Miss Young has been appointed research assistant for next year and plans to continue this work.

Miss F. E. Lamon has completed a survey of sheetings on the Canadian market. Sheetings were tested before and after one hundred launderings.

Results indicated a difference in Canadian and American sheetings in that Canadian sheetings had a lower thread count but higher weight and strength than sheetings manufactured in the United States for the same type of service. Minimum specifications were drawn up for four classes of sheetings with grades within each class. Grading was based on those measurable factors which, by statistical analyses, were found to be related to wear as judged by loss of tensile strength in laundering. If sheeting were labelled in this manner with class and grade, based on analyses, much of the uncertainty in consumer purchasing would be removed.

Miss M. E. Lovell has begun a study of a comparison of costs and efficiencies of home and commercial laundering processes. The National Research Council prepared standard test bundles which, through the co-operation of a Toronto laundry, were laundered one hundred times. The samples were tested for degradation by the cuprammonium fluidity test and tensile strength loss, and for whiteness retention and soil removal. The results were then compared with the samples laundered by various standard home processes.

Miss J. S. Roberts has analysed statistically data accumulated on tensile strength which show that the variance between results determined with and without controlled humidity was negligible unless Haven's correction formula was applied. By this correction variance was increased significantly. This suggests the inadvisability of using this correction formula under these conditions.

Hygiene and Preventive Medicine, under direction of Professor D. T. Fraser

Mr. R. J. Wilson has again held the appointment of fellow in this Department. He has continued his studies in staphylococcus. He has investigated the factors operative in the formol detoxification of staphylococcus exotoxin. His studies have resulted in the production of staphylococcus toxoids several times more potent than those formerly prepared. A second large outbreak of staphylococcal food poisoning in Hamilton, Canada, has been fully and thoroughly investigated and reported in the Canadian Public Health Journal. A summary of epidemiological and laboratory data obtained during investigation of the several major outbreaks was presented at the Sixth Pacific Science Congress in July of 1939. Mr. Wilson has explored the use of Hornibrook's casein hydrolysate for the cultivation of H. pertussis with a view to its use in the preparation of vaccine for human use.

Dr. Ella Kuitunen, who is working under a grant from the Banting Research Foundation, has conducted a comprehensive survey of the intestinal parasites and of enterobius infection in children, with the kind co-operation of Dr. Alan Brown and Dr. Gladys Boyd. Among 438 children, 33.5% were positive for some species of protozoan or helminth parasites. The incidence of enterobiasis (pinworm) as found in one institution was surprisingly high, namely approximately 70%. A survey of intestinal parasites in adults was carried out at the Toronto Western Hospital with the co-operation of Dr. H. K. Detweiler and Dr. T. A. J. Duff. It was shown by stool examination that parasitic infection was present in 29% of 324 persons including one case of Entamoeba histolytica, one case of Diphyllobothrium latum and one case of Taenia saginata. Swab examination of 306 adults showed 9.8% infected with pinworm.

In the past academic year Mr. J. W. Fisher investigated the nutritional elements which are responsible for the development of the Vi agglutinogen in a number of strains of Bact. typhosum. His findings may result in important changes in the method of preparation of typhoid vaccine.

Dr. Frieda Fraser has, in collaboration with Dr. Hannah and Dr. Doyle at the Riverdale Isolation Hospital, investigated the incidence of agglutinative types of strains of haemolytic streptococcus in a small scarlet fever ward at the Riverdale Isolation Hospital. By means of the technique employed it is possible to show the transfer of agglutinative types from one patient to another in the

same ward. The amount of exacting technical work was very great. Swabs from physicians, attendants, and patients are taken at frequent intervals and all strains of haemolytic streptococcus are grouped and typed. In view of the emphasis being placed on aerobic transfer of infection by certain investigators Dr. Fraser's studies assume importance in assessing the factor of direct transmission. Haemolytic streptococci of the same types as those infecting the patients were found in cultures from the nurses' hands immediately after attending the patients. These types were not obtained from cultures of the hands immediately before, nor from the nurses' throats.

Because of his previous experience with streptococcal infection, Dr. Ronald Hare initiated studies, on the outbreak of the war, on wound infection and, in particular those due to the haemolytic streptococci. An attempt is being made to investigate the probable source of the organism in order to evolve methods for the prevention of this form of infection. Progress so far made would indicate that these organisms are not present in the wound at the time of infliction but probably find their way in from exogenous sources of which the most important are the nose and throat of human carriers and other infected cases in the same ward. In view of this it is hoped that methods may be worked out by which these infections may be prevented.

Dr. Hare has continued his studies on the virus of influenza. The fluctuations which occur in the neutralising antibody for this virus have been followed in persons of different age groups over a period of three years. Fluctuations are probably due to repeated infections with the virus. There is little evidence that the presence of the neutralising antibody will protect the host against influenza or that its absence or low titre is any index of greater susceptibility to infection. Experiments have also been continued on active and passive immunity. His studies have shown that contrary to what has been supposed, it has been found that variations in the antigenic constitution of the virus are of small moment provided that a sufficiently large dose is employed for immunisation.

Dr. Donald Fraser with the assistance of Dr. E. L. Davey, who has been added to the staff in the absence of Dr. Brown, carried out investigations in the field of diphtheria. Various preparations of toxoid have been investigated. The most satisfactory method of assessing the antigenicity of these preparations, the dosage and the interval used, is in groups of children. These studies were made possible through the co-operation of Dr. F. Cuddy from Whitby, Dr. J. A. Ruttel from Dresden and the late Dr. James Roberts and Dr. J. E. Davey from Hamilton. It has been clear that one of the chief factors involved in the effectiveness of toxoid is the length of interval between the injections. There is reason to believe that modifications in the preparation of this prophylactic and the way in which it is administered will result in simpler and more effective use of diphtheria toxoid.

Through the co-operation of Dr. A. B. Moffat, Director of Laboratories, Department of Public Health, Toronto, the diphtheria carrier survey in school children is being continued. No carriers have been found in the examination of 3,284 nose and throat cultures in school children examined from December 5th, 1939, to June 15th, 1940. No diphtheria carriers have been discovered since December 1937 in 4,000 cultures examined. This is an extraordinary finding but is consistent with the fact that cases of diphtheria are very rare in Toronto.

Dr. K. Sternbach, who is working under a grant from the Banting Research Foundation, is studying the action of certain new chemical preparations on Gram-negative cocci in mice.

Dr. P. J. Moloney is continuing his studies in diphtheria toxoid. At the present time an alum toxoid preparation of a new character is on trial in human beings. If it proves effective, this new preparation has distinct advantages over the alum toxoids at present available. In conjunction with Mr. Orr, Dr. Moloney has further extended his work on certain bile constituents on diphtheria toxin. A summary of this work was given before the Royal Society of Canada.

Dr. Edith Taylor described a new Schick test toxin. Results of this study

have been published in the Journal of Immunology. Dr. Taylor is continuing her work in exploring synthetic media for the preparation of diphtheria, tetanus and B. welchii toxins. This latter research is stimulated by the urgency of the requirement of toxins and toxoids of high potency for the production of antitoxins and for the active immunisation of troops with suitable toxoids of the gas gangrene group of bacteria.

Medicine, under direction of Professor Duncan Graham

The outbreak of the War and the enlistment for active service of certain members of the staff of the department has seriously affected work in the field of clinical investigation. The study of certain problems has had to be suspended and work on others curtailed. Nevertheless, definite progress has been made.

Dr. Cleghorn and his associates, Dr. Fowler and Mr. Clarke, have continued their studies on the functions of the adrenal cortex and on the effects of synthetic cortical hormone treatment in cases of Addison's disease. The cause of the fall in blood pressure in adrenal insufficiency has been investigated. In adrenalectomised animals it has been found that the splanchnic blood vessels react in an apparently normal fashion to nerve stimulation and to vasoconstrictor drugs, which goes to show that the fall in blood pressure in adrenal insufficiency is not due to a failure in the capacity of the peripheral blood vessels to contract. The occurrence of certain electrocardiographic changes, the development of cardiac arrhythmia, and a fall in blood pressure following the administration of pituitrin to adrenalectomised animals are suggestive evidence of impairment of cardiac function as a cause of the fall in blood pressure in adrenal insufficiency.

Blood and extracellular fluid volume studies, now being conducted in conjunction with Dr. J. K. W. Ferguson of the department of pharmacology, have contributed further evidence in support of cardiac failure as the cause of cardiovascular collapse in adrenal insufficiency. A preliminary report of this work was presented at a meeting of the Royal Society of Canada.

In the last annual report reference was made to the clinical trial of desoxycorticosterone acetate—synthetic adrenal cortical hormone—in the treatment of patients with Addison's disease. Twelve cases of Addison's disease have been treated with this synthetic hormone for periods of six to twenty-three months. It has been found that the therapeutic effect of 5 mg. of the synthetic hormone dissolved in 1 c.c. of sesame oil is equivalent to that of 10 c.c. of a potent aqueous extract of the adrenal cortex. The synthetic hormone was given intramuscularly, or subcutaneously in the form of implanted pellets. Four patients feel well and are doing a full day's work; two patients enjoy considerable, if restricted, activity; one patient has died, and one has entered a remission in which no treatment is necessary. The other four patients have done poorly and require supplemental therapy with an aqueous cortical extract, which indicates that the synthetic hormone, desoxycorticosterone acetate, does not represent a complete substitution therapy in Addison's disease. Despite this shortcoming, the synthetic adrenal cortical hormone marks an important advance in the treatment of Addison's disease from the standpoints of convenience, cost and continuance of treatment of Addison's disease, as all aqueous cortical extracts have an evanescent action.

Working under a grant from the National Research Council, Drs. Cleghorn and Fowler, in conjunction with Dr. P. H. Greey of the department of bacteriology, have been studying the effects of sulphanilamide compounds in shock and their efficacy in the treatment of gas gangrene infection in animals. Definite progress is being made in this war problem.

Drs. Richardson and Hyland have made a very careful study of the clinical and pathological findings in a series of cases of subarachnoid and intracranial haemorrhage caused by "berry" aneurysms. Dr. Hyland, in association with Mr. Goodwin and Dr. Hall of the department of medical research, has published the first report of their study of the electroencephalographic changes in the brain

of patients suffering from epilepsy. It is to be regretted that the war has interrupted this field of investigation.

Drs. Fletcher and Wallace Graham have published a valuable report entitled "Complications of Diabetes Mellitus with Special Reference to Cause and Prevention". The report is based on 1100 cases of diabetes mellitus admitted to the Toronto General Hospital between the years 1933 and 1938. In this series 114 patients died; 14 in coma and 100 without coma. A review of the 14 coma deaths goes to show that infection was the precipitating factor in six cases and neglect of proper dietetic and insulin treatment in eight cases. Deaths without coma were due to vascular disease in 48 per cent and to infection in 29 per cent. The report clearly shows that the high fat diet employed in the treatment of our diabetic patients had not contributed in any appreciable degree to the development of vascular degeneration. The essential factor in prevention of cardiovascular complications is the constant maintenance of sugar-free urine and of a fasting blood-sugar percentage between 0.1 and 0.15 by carefully controlled dietetic and insulin treatment, the eradication of focal infection and the instruction of patients particularly in reference to the prevention of repeated infections and in the proper care of the feet. This report of Drs. Fletcher and Graham received special comment in the editorial section of the British journal The Lancet in February last.

Drs. Dauphinee and Kerr have investigated the therapeutic and toxic effects of sulphathiazole, one of the newer derivatives of sulphanilamide. It has been found: (1) that sulphathiazole is an effective drug in the treatment of pneumococcal pneumonia but from present evidence cannot be considered superior to M. & B. 693 (sulphapyridine); (2) that toxic manifestations, particularly nausea and vomiting, are less severe with sulphathiazole than with sulphapyridine but drug rashes are more severe and drug fever more common. It has been reported that this new drug sulphathiazole is effective against staphylococcal infections. In our experience so far there appears to be little evidence that sulphanilamide, sulphapyridine or sulphathiazole materially affects the clinical course of the infection in cases of staphylococcal pneumonia or in cases of staphylococcal infection with abscess formation. Observations have been made on four cases of anuria resulting from the use of sulphapyridine, particularly in respect to findings in these cases and methods of treatment of this complication.

Medical Research, under direction of Sir Frederick Banting

In September, 1939, the Department of Medical Research unanimously volunteered their services for the investigation of war medical problems. Much of the research work being carried on in this department could not be discontinued suddenly and as a consequence every effort was made to continue it along with the new problems undertaken.

One of the most important problems facing medical research at this time is that of aviation medicine. The new type of aircraft has far exceeded the physiological endurance of the pilot. A great deal of research is necessary in order that the pilot may (1) fly at high altitudes with efficiency, security and comfort, and (2) safely utilise the manoeuverability of the new high speed fighter aircraft. The department of medical research undertook these problems and was assisted by a grant from the Department of National Defence. The Department of National Defence appointed an inter-departmental Aviation Medical Research Committee, of which the head of the department of medical research was the chairman. This Committee has been enlarged and has recently become an Associate Committee of the National Research Council. The Department of National Defence has made a grant for the work of this committee, much of which is being carried out in the department of medical research. Reports on this work will not be available except to the Department of National Defence and the National Research Council for the duration of the war.

During the course of the year there has been a gradual transfer of the workers in this department to war problems. The following is a report of the work on pre-war problems:

Dr. W. R. Franks has continued to direct the work of synthesis of a vaccine against carcinogenesis in animals. With the co-operation of Mr. L. F. King, working under an Eli Lilly Fellowship, various oestrogens have also been linked successfully to proteins and their physiological activity studied, with the assistance of Miss M. M. Shaw. Mr. W. N. Keefe has succeeded in conjugating certain azocarcinogens for immunological study. Dr. H. J. Creech, under the direction of Dr. L. F. Fieser, at Harvard University, has prepared certain derivatives of the polycyclic aromatic hydrocarbon-carcinogens similarly suitable for conjugation.

With the assistance of Mr. G. J. Millar, a study has been made of the resistance of tumor cells to anoxia and glucose lack. Malignant animal tumors can survive anoxia even in the absence of glucose, for four hours or more.

With the assistance of Miss E. Grant, derivatives of various fractions of tubercle bacilli have been developed suitable for protein conjugation. Quantities of four different conjugates have been prepared and are to be tested for immunological activity when an opportunity affords.

With Mr. G. A. Meek, certain serological reactions have been demonstrated on monomolecular surfaces. Studies of the limits of the specificity of these reactions have been undertaken with the use of synthetic chemoantigens.

The work of Dr. G. E. Hall on experimental heart disease, which has been in progress for several years, has been financed, in part, by a further grant from the Josiah Macy Jr. Foundation, New York, who have provided three fellowships for this work.

Dr. C. G. McEachern, Dr. F. H. Smith and Dr. G. E. Hall have studied the influence of different drugs and combinations of drugs on cardiac pain and upon the mortality following coronary artery occlusion. The use of one particular combination of drugs has resulted in a decrease in the mortality approaching the optimum attained only by denervation of the cardio-sensory pathways.

Drs. McEachern, Smith and Janes have also made a comparative study of the cardiac changes occurring in various types of sudden death, asphyxia, drowning, electric shock, coronary occlusion, adrenal insufficiency, etc.

Drs. Janes and Hall have investigated possible visceral-cardiac reflexes and have shown that distension of the gall bladder or upper abdominal region will produce cardiac irregularities. However, when the heart muscle had been damaged and after subsequent recovery, similar distension of the gall bladder or upper abdominal cavity produces marked cardiac irregularities which almost invariably terminate in ventricular tachycardia and fatal ventricular fibrillation.

Dr. McEachern and Dr. Janes have been collaborating with Dr. D. W. G. Murray (department of surgery) on the experimental surgery of heart valves and coronary arteries.

Continuing the general study of experimental arteriosclerosis, Dr. Smith and Dr. Hall have been studying the relation of the pancreatic secretions to arterial degeneration.

Dr. Janes has attempted to provide a collateral circulation to the kidney by means of muscle grafting in normal animals. The same procedure was carried out on hypertensive animals with a resultant decrease in mean blood-pressure.

Working with Dr. Murray (department of surgery), Dr. Janes has been working on autogenous venous grafts in the arterial system in the presence of infection, homologous venous and arterial grafts, occlusion of arteries as a result of suturing and ligation (including coronary artery suturing), transplantation of kidneys and the patency of glass cannulae in the arterial system with the use of heparin.

Dr. Janes has also carried out an extensive study on the problem of dosage of heparin in dogs and humans. This study, under the direction of Dr. Murray,

has included cases of thrombophlebitis, pulmonary emoblism, aneurysm, subacute bacterial endocarditis, thrombosis of central vein of retina and blood vessel suture, all of which have been carefully followed, with clotting times.

Mr. McArthur has been making a comprehensive chemical study of atherosclerotic plaques as obtained from fresh human aortas. Many fractions have been obtained, from which several chemical substances, previously not found in atheroma, have been isolated and studied. These various specific fractions will be injected and fed to animals in an attempt to reproduce the atheromatous degeneration.

Assisted by a grant from the Scottish Rite Masons, Northern Jurisdiction, and with fellowships provided by the Neuropsychiatric Institute of the Hartford Retreat, Mr. J. E. Goodwin and Dr. F. L. Lawson, together with Dr. W. K. Kerr, have continued their study of the changes in electrical activity of various areas of the brain as a result of insulin and metrazol shock. Later, the changes in cerebral circulation, under similar conditions, were studied. This work has been carried out as part of an extensive clinical investigation on schizophrenia in association with the Department of Psychiatry and sponsored by the Rockefeller Foundation. The physiological, pharmacological and biochemical aspects of the clinical work have been conducted by Dr. Hall, Dr. J. Doupe, Mr. D. W. Lougheed, Miss E. Melrose, and, more recently, by Dr. A. C. Burton.

Miss Lang has given assistance again this year to Dr. Dean McDonald, of St. Catharines, in connection with the problem of cholecystitis and liver function.

Mr. Lougheed and Miss Lang have been studying the biochemical changes associated with anoxia, the results of which are being applied to a more detailed study of the physiological and biochemical changes resulting from oxygen lack.

Although most of the work has been carried on without serious interruption, it has been necessary, in some instances, to shift the personnel so that the problems in Aviation Medical Research, which have been assigned to the Department, could be carried out with expedience by trained research workers.

The Biochemical Division of the Department, under Dr. C. C. Lucas, has continued the chemotherapeutic studies begun several years ago. About 140 compounds have been prepared during the year. These have been tested for anti-bacterial activity in the department of pathology and bacteriology by Dr. P. H. Greey, using numerous different strains of haemolytic streptococci, Str. viridans, staphylococci, pneumococci (Types I, II, III, IV, VIII, IX, XII and XIX), B. coli, B. proteus and B. typhosus. Compounds thus shown to possess high bacteriostatic efficiency have been tested *in vivo*, using mice experimentally infected with mouse-virulent strains of Str. haemolyticus, pneumococci or staphylococci.

Dr. S. F. MacDonald has prepared about 75 compounds. Ammonia, aromatic and heterocyclic amines have been condensed with (*a*) phenol-4-sulphonyl chloride, (*b*) phenol-2: 4-disulphonyl chloride, (*c*) phenol-2: 4: 6 trisulphonyl chloride, (*d*) resorcinol-2: 4-disulphonyl chloride, (*e*) 2-nitrophenol-4-sulphonyl chloride, (*f*) benzoxazolone-6-sulphonyl chloride. Two further series of compounds were obtained from the derivatives of (*e*) and (*f*); (*g*) derivatives of 3-amino 4-hydroxy benzene sulphonamide by reducing the nitro groups of the compounds derived from (*e*); (*h*) derivatives of 4-amino 3-hydroxy benzene sulphonamide by splitting off the carbonyl group of those derived from (*f*).

Mr. C. Marchant and Dr. Laurella McClelland have collaborated in the preparation of upwards of fifty compounds containing aromatic, aliphatic and heterocyclic substituents replacing one of the sulphonamide hydrogens of sulphanilamide. Several related compounds containing arsenic or tin have also been prepared.

Dr. C. von Seemann has prepared a number of compounds derived from phenothiazine and thiophene, and also a few dyes by coupling diazotised sulphanilamide with substituted aromatic and heterocyclic residues.

While many of the compounds prepared by the above workers have shown considerable promise, by exhibiting *in vitro* activity against one or more species of bacteria, only about ten out of the 140 appeared to have significant value when tested *in vivo*. None of them equalled dagenan as far as streptococcal and pneumococcal infections were concerned, but several have shown appreciable activity towards staphylococcal infections in mice. The value of some of the more promising compounds is being more thoroughly investigated in mice.

Dr. Lucas, with the help of Miss Margaret Wheatley, has done further work on the fractionation of royal jelly. This work, started last year by Mr. G. F. Townsend, under Dr. Lucas, has also been receiving further study by Mr. Townsend at the Ontario Agricultural College. He has now commenced feeding experiments, using the purified fractions and substitutes for them, in an endeavour to identify the component or components responsible for the amazing development of the reproductive apparatus of the queen bee.

Miss Margaret Wheatley has assisted Dr. Lucas in further work on a rapid micro-method for semi-quantitative analysis of minute kidney stones and urinary gravel. A method has been devised which permits a fairly accurate analysis (of particles as small as 10 mg.) in less than half an hour. The method has been applied to a number of calculi obtained through the co-operation of Dr. D. R. Mitchell of the department of urology.

Mr. L. B. Macpherson has been studying the lipids derived from human tuberculous lungs. Abnormal amounts of fatty material occur in such lungs. A careful fractionation of this fat has revealed the absence of phthioic acid and other materials characteristic of the fatty substances elaborated by the tubercle bacillus. The evidence obtained to date indicates that the excessive quantities of lipids found in tubercle-infected lungs are due to excessive deposition of fatty material by body cells and do not arise from the tubercle bacilli.

Mr. J. M. Beveridge has continued the study of methods for separating the amino acids from protein hydrolysates in crystalline form or as characteristic derivatives. He has found that a certain sequence of separations reduces the usual errors to a minimum. The method evolved has been applied to a human hair hydrolysate with excellent results. The presence of aspartic acid, proline, hydroxyglutamic acid and serine in hair has been proven for the first time and accurate figures for the first two of these amino acids have been obtained. The quantities of cystine, arginine and glutamic acid isolated have been raised significantly above the amounts previously reported.

Dr. D. A. Irwin has continued his work on silicosis in co-operation with the mining group and during the past year particular attention has been paid to the results of treating animals with established silicosis by means of the aluminum powder. It has been found that with aluminum therapy not only can the progress of the disease be stopped but also that the elimination of quartz dust from the lung is hastened and considerable resolution of the more acute lesions of the disease takes place.

In conjunction with the clinical use of aluminum powder, Dr. Irwin, Mr. J. H. Johnston and Mr. R. C. Smith investigated methods to produce and disperse in the atmosphere particles of metallic aluminum of sufficient fineness to permit its use therapeutically. An apparatus has been constructed that continuously produces and disperses in the atmosphere in known concentrations aluminum particles of a size capable of gaining entry to the lung alveoli. Two such machines have been constructed, with the help and advice of the Superintendent's Office, and have been supplied to the clinical investigators.

Dr. Irwin and Mr. Johnston have determined the distribution and percentage of aluminum retained in the lungs of rabbits when the exposure to aluminum dust was known in terms of the amount of air breathed, duration of exposure and concentration and size of the dust particles. The results have been valuable in establishing the conditions for the clinical use of aluminum therapy.

Mr. F. E. Chase has completed a study of the effect on the growth of tubercle

bacilli of the addition to the culture medium of very dilute solutions of silicic acid. It has been demonstrated that the presence of silicic acid stimulates growth of the organisms. This finding is of importance as it explains, in part at least, the increased susceptibility of silicotics to pulmonary tuberculosis.

Dr. V. P. Collins has made a study of the pathogenesis of ocular lesions due to a variety of chemical irritants. Having established the nature of the various lesions, appropriate therapeutic measures are being explored.

Dr. Frances McKay has investigated chemical methods to estimate quantitatively the concentration of oestrone in blood and urine, in the hope of developing a more rapid method for clinical use. Blood samples have been obtained through the co-operation of the Department of Obstetrics and Gynaecology. The series has been too small to permit conclusions to be drawn as to its clinical value.

Dr. B. Mendel, with Miss D. Mundell working as an Eli Lilly fellow, and Miss F. Strelitz, continued their work on choline esterase. They found that different electrolytes in physiological amounts act as activators or inhibitors of the esterase. Calcium and magnesium ions were found to activate and potassium ions to inhibit the activity of the enzyme.

Miss Strelitz has concentrated choline esterase from large amounts of horse serum and has purified the enzyme from 400-500 times. This purified preparation, when injected intravenously into animals, increased their normal esterase activity more than 200 fold for several days. The physiological reactions of the treated animals were studied.

Miss Mundell continued the work on purification of the esterase from mouse liver. The purification has reached a stage where the enzyme can be separated from its colloidal carrier. Work is now in progress to determine the chemical nature of the enzyme.

Mr. N. R. Stephenson commenced his work on the investigation of the synthesis of casein, but for the past few months he has been working on the purification of histaminase. The kinetics of histaminase, as well as the distribution of the enzyme in various tissues, has been studied by the manometric method. Some knowledge concerning the reaction between histamine and histaminase has been obtained.

Dr. M. Wong has been investigating the eclampsia problem in experimental animals at various stages of pregnancy.

Mineralogy and Petrography, under direction of Professor A. L. Parsons

Professor Ellis Thomson and Mr. J. S. Allen were engaged in a mineralographic and chemical study of certain sulphides from Sudbury District, Ontario.

The work of re-examining imperfectly known mineral species, in order to obtain definitive descriptions for the new *System of Mineralogy* in preparation at Harvard University, has been continued by Professor M. A. Peacock, Dr. V. B. Meen, Mr. L. G. Berry and Mr. J. S. Allen. In this work the ordinary mineralogical methods are combined with *x*-ray powder photographs for identification, and *x*-ray photographs on single crystals for obtaining the symmetry, dimensions and atomic content of the crystal lattice cell. Type material from the museums in Toronto, Cambridge (Mass.), Washington (D.C.), London and Stockholm, has been used as well as Canadian material. These studies have led to a series of papers on single species (published, in press, or in preparation); a summary of the röntgenographic observations, December, 1938-May, 1940, is in press. Some of the results obtained within this program of research are the following:

Professor M. A. Peacock has made complete studies of Maucherite (Nickel-Speiss, Placodine, Temiskamite); Rammelsbergite and Pararammelsbergite (new species); Dyscrasite and Antimonial Silver. Work on Tellurbismuth, Tetradymite, Joseite and Grünlingite, is in progress. *Goldschmidtine* is identical with Stephanite.

Dr. V. B. Meen has made a preliminary study of Cobaltite, Gersdorffite, Corynite, Ullmannite, Kallilite and Willyamite, showing that these minerals form an isostructural group.

Mr. L. G. Berry has continued his work on the mineral sulpho-salts. Complete studies have been made of Galenobismutite, Jamesonite, and Boulangerite. Preliminary data have been obtained on Baumhauerite, Jordanite, Rathite and Sartorite. The following identifications have been made: *Epiboulangerite* = Boulangerite; *Guitermanite* = Baumhauerite; *Lillianite* = Galena or Galena with Galenobismutite; *Beegerite* = Galena; *Weibullite* (Seleniferous Galenobismutite) = a mixture.

Mr. J. S. Allen has shown that Skutterudite, Smaltite and Chloanthite are isostructural and may be considered varieties of one species.

The Walker Mineralogical Club in June, 1940, has on its membership list three honorary members, two hundred and sixty-nine ordinary members and eighteen student members. Of these, five are on active military service and are exempt from dues. In addition to the above, the Club has lost four members by death and four members by resignation during the year.

The Club pays a portion of the cost of publication of "Contributions to Canadian Mineralogy" which has increased in size by the collaboration of our colleagues in other institutions who are members of the Club.

Obstetrics and Gynaecology, under direction of Professor W. A. Scott

Dr. W. G. Cosbie and Dr. J. R. McArthur continue their work in collaboration with Dr. G. S. Richards in the radiological treatment of gynaecological carcinoma. Dr. Nelson Henderson continues his work in collaboration with the department of pathology on the routine work of gynaecology, as well as continuing investigation of certain special subjects. Dr. M. C. Watson continues to direct the work in endocrinology.

Department of Oto-Laryngology, under direction of Professor G. M. Biggs

During the year Dr. Howard Burnham has continued his investigations of the circulation of the lateral wall of the nose and the reaction of cavernous areas to localised irritation. A number of translite photographs showing the work are on file in the department. Dr. Angus McLeod has under observation a large group of cases of atrophic rhinitis (ozeana), illustrating the effect of oestro-genic substances used in the treatment locally. His studies are continuing. Dr. J. Grant Strachan is carrying on his research of atrophic rhinitis in children at the Hospital for Sick Children. Dr. Joseph Sullivan is doing experimental work on "The regeneration of bone following operative defects made by different instruments".

Paediatrics, under direction of Professor A. Brown

As a result of our observations on the use of barriers of ultraviolet light in the prevention of bacterial spread, six specially constructed cubicles have been set up in the Infant Ward of the Hospital for Sick Children. This enables us to study the use of this new technique in the prevention of cross-infection from one patient to another under practical ward conditions. During the past seven months, no case of cross-infection has occurred among the sixty infants who have been cared for in these special cubicles. In a similar number of cases enjoying the same medical and nursing services but without the advantages of separate cubicles and ultraviolet light barriers, spread of upper respiratory infections has occurred in 9 instances.

In cooperation with the Connaught Laboratories, studies have been made on the types and virulence of meningococcus organisms encountered in cases of meningococcal meningitis. The carrier rate of this organism has been studied in hospitalised children of various ages, the carrier rate being found to be lower than in adults. Various preparations of whooping-cough vaccine have been

tested for their ability to protect mice against experimental infection with this organism. A whooping-cough immune rabbit serum is being developed for use in passive immunisation against and treatment of this disease. Work is continuing on a comparison of the chemotherapy and serum treatment of pneumonia and various types of meningitis.

Studies are being conducted upon the heart in rheumatic fever. These consist of the taking of electrocardiographs using chest leads, measurements of changes in heart size, graphic registration of the heart sounds, and measurement of potassium in the blood.

The Department of Psychological Medicine is rendering valuable service to many of the welfare agencies which deal with the so-called problem child. The underlying cause of many of the behaviour problems encountered has been found and corrected, with the result that many of our future citizens who otherwise might become a public liability are developing as normal children.

Much work has been done on the chemical estimation of vitamin B1 in various Canadian foods. In the method used the vitamin B1 is extracted from the substance being assayed by the use of a base exchange column, then oxidised to thiochrome and determined by measuring the fluorescence produced on exposure to ultraviolet light. In a number of instances the B1 content as determined chemically has agreed with that found biologically. Further work is being done to check the chemical estimation of this vitamin against the biological determination.

The vitamin C content of various citrus fruit juices and tomato juices has been determined. It was found that on the basis of Toronto winter retail prices the juice obtained by sieving Canadian factory canned tomatoes is as economical a source of vitamin C as is freshly extracted California orange juice.

Observations have been made on the effect of vitamin K on the prothrombin content of the blood in infancy. It was found that many infants born from supposedly normal mothers have a decreased prothrombin content in the blood, in some cases as low as that found in cases of haemorrhagic disease of the newborn. The administration of vitamin K by mouth to pregnant women, beginning one week before the expected date of confinement, produced a normal prothrombin content in the infant's blood. In 6 consecutive cases of haemorrhagic disease of the newborn the administration of vitamin K intravenously brought about an increase in blood prothrombin and cessation of the haemorrhage. In one case vitamin K has been administered intramuscularly with resultant cure. In the past, our treatment of haemorrhagic disease of the newborn has been by blood transfusion, in some cases more than one transfusion being required to control the bleeding. By the use of intravenous and probably by intramuscular injection of vitamin K the haemorrhage can be stopped rapidly at the first indication of bleeding, a blood transfusion being unnecessary except in those cases where previous loss of blood has been large enough to lower the haemoglobin in the infant's blood.

Studies on the effect of diet on the pregnant woman, the infant and the woman's milk are continuing. In this observation the Department of Obstetrics, University of Toronto, the Dietetic Department of the Toronto General Hospital, and the Visiting Homemakers Association are cooperating with our department. Up till the present, observations have been made or are progressing on 400 cases. We have found that in comparable groups of pregnant women those having a good diet show much less anaemia, infections and toxaemia, and a greatly decreased incidence of stillbirths, miscarriages and prematures than occurs in those on a poor diet. In addition, the mothers on a good diet show a much greater ability to nurse their infants than do those on a poor diet. Through the generosity of an anonymous Toronto business-man funds have been made available to supplement the diet of a certain number of pregnant women who up till the fifth month of pregnancy had been on a poor diet. The daily addition of 1 egg, 1 orange, $4\frac{1}{2}$ ounces of canned tomatoes, $1\frac{1}{2}$ pints of milk, 1 ounce of cheese

and 1 ounce of wheat germ to the poor diet previously consumed by this group of women raised their obstetrical rating from the low of the poor diet to that enjoyed by the good diet group. A summary of the obstetrical rating during pregnancy, labour and postpartum, which also takes into account the condition of the infant, made by the attending obstetricians without knowledge of the woman's dietetic history, is given below.

Of those women on a poor diet throughout pregnancy, the obstetrical rating was 'Excellent' or 'Good' in 53%; 'Fair' or 'Bad' in 47%; on a good diet throughout, 'Excellent' or 'Good' 89%; 'Fair' or 'Bad' 11%; on a poor diet up to approximately 5 months of pregnancy then supplemented to make a good diet, the obstetrical rating was 'Excellent' or 'Good' in 91%, 'Fair' or 'Poor' in 9%. In the above rating, 'Excellent' signifies a good record throughout pregnancy, confinement and puerperium; 'Good'—only minor complications; 'Fair'—major complications, and 'Bad'—serious complications.

Pathology and Bacteriology, under direction of Professor W. Boyd

Investigations have been carried out on the following subjects: Subacute myocarditis (Dr. J. D. Duffin), Periarteritis nodosa (Dr. J. P. Wyatt), Biliary cirrhosis (Dr. W. G. Rice), Paget's disease with sarcomatous change (Dr. W. B. Charles). A comparison of struma lymphomatosa and granuloma of the thyroid (Dr. W. D. Stevenson), Chorionepithelioma in the male (Dr. W. G. Bigelow), and Hutchinson-Boeck's disease and generalised sarcoidosis (Dr. R. C. Sniffen).

A systematic search for chemotherapeutic compounds to be used against the staphylococcus has been conducted in cooperation with the department of medical research. The full in vitro and in vivo testing of new compounds prepared under the direction of Dr. C. C. Lucas in the biochemical division of the department of medical research was made possible through a grant from the Banting Research Foundation. Many new compounds have been investigated and much worthwhile information has been gathered, but a satisfactory compound has not yet been found. Recently the scope of this investigation has been broadened by arrangements with Parke, Davis and Company, whereby compounds synthesised by their chemists were made available for testing, thus increasing the speed with which this field can be covered. A highly satisfactory collaborative programme has been worked out and Parke, Davis and Company have further assisted the project by a generous donation.

Aided by a grant from the National Research Council, Dr. P. H. Greey has investigated the chemotherapeutic possibilities of some of the more active sulphonamide drugs in gas gangrene produced experimentally in the smaller laboratory animals. In association with Drs. J. L. A. Fowler and R. A. Cleghorn of the department of medicine, the problem was further studied in dogs, and the effect of sulphonamide drugs in animals suffering from shock determined. Under the experimental conditions used these drugs failed to exert a curative effect on gas gangrene due to Cl. Welchii.

Dr. Greey is acting on the subcommittees on gas gangrene and on blood storage of the associate committee on medical research of the National Research Council. He took part in a symposium on chemotherapy before the Royal College of Physicians and Surgeons of Canada. For his work in this field he was awarded the Starr gold medal.

Dr. R. M. Price is continuing her studies in bovine tuberculosis. She has accumulated considerable statistical data to show the gradual decrease in the incidence of bovine tuberculosis in children in the Province of Ontario since the adoption of widespread, and more recently, compulsory pasteurisation of milk. She is also studying the effect of the avian type of the tubercle bacillus in experimental animals, notably the domestic cat, and the type of allergy developed by this animal as a result of infection with controlled doses of this bacillus.

Dr. J. C. Romeyn and Dr. Greey have studied the relative value of different

materials used for wrapping instruments, dressings and other surgical equipment. It was found that bacterial spores passed readily through the factory cotton commonly used to keep such goods sterile. It was determined which materials were most impervious to bacterial spores. This information was of special value to the Canadian Red Cross in connection with the sterile goods being sent to the troops overseas, and has also found practical application on the wards of the Toronto General Hospital.

Dr. J. F. Stecker studied the accuracy of the Laughlen test for syphilis under various conditions of testing, and found the reaction particularly suitable for the rapid exclusion of syphilis in blood donors.

In the section of surgical pathology special investigations have been carried on by Dr. W. L. Robinson on gastric and duodenal ulcers and on islet tumours of the pancreas, by Dr. A. J. Blanchard on glomus and carcinoid tumours, and by Dr. J. B. Stecker on dermatofibromata of the skin.

Concentration on war activities and depletion of the staff of the division of neuropathology on this account has seriously hampered the undertaking of new researches during the year. Dr. M. R. Shaver has published an article entitled "Colloid Cysts of the Third Ventricle" in the Archives of Neurology and Psychiatry, March, 1940. Dr. J. Clifford Richardson has collected an interesting series of specimens of muscle from clinical cases of different types of muscular dystrophy. Dr. A. F. Goggio has completed an important research on the cause of contre-coup cortical haemorrhage in cases of head injury. He has a paper on this subject ready for publication. Dr. Mary I. Tom has collaborated with Dr. J. W. Magladery of the department of physiology in an experimental investigation of degeneration in nerve and muscle tissue following (1) transections of the spinal cord, and (2) injections of alcohol into peripheral nerves. Dr. Linell attended the 3rd International Neurological Congress at Copenhagen last August, giving a paper on "Acute Hyperthyroidism Associated with a Suprasellar Tumour". He has also reviewed a series of cases of subdural haemorrhage and has prepared a paper for publication on this subject.

Pathological Chemistry, under direction of Professor Andrew Hunter

Drs. Nicholson, Urquhart and Selby have continued their work on kidney function and experimental nephrosis, studying in particular the effects of damage to the distal convoluted tubules produced by uric acid. The number of experiments performed has of course diminished since the departure of Dr. Urquhart for service with the Army Medical Corps; but enough has been accomplished to show that the chief effect of the damage was a diminution in the rate of excretion of creatinine and inulin; that of urea remaining practically unaltered.

Dr. Nicholson, in cooperation with Dr. Holman of the department of bacteriology, has done further work upon the relationship between staphylococcus injections and carbohydrate metabolism. Certain modifications of the high carbohydrate diet in use have allowed the feeding period to be prolonged. As a result some animals have shown in their carbohydrate tolerance breaks of such a degree, that high fasting blood sugars and slight glycosuria have resulted.

Dr. Woodward, continuing his study of the specificity of arginase, has isolated the product of the action of liver extract upon argininic acid, and has identified it as α-hydroxy-δ-amino-valeric acid. This affords the final proof that argininic acid is actually susceptible to the action of arginase. Under suitable conditions as much as 90% of the substrate has been observed to undergo hydrolysis. The pH optimum of the reaction has been shown to be the same as for arginine itself, and to be similarly affected by cobalt.

Mr. Gornall has devoted his attention to the problem of urea formation in the liver. In this connection he has worked out a colorimetric method for the determination of citrulline. By the use of this method he has obtained proof—

hitherto lacking—that liver slices do actually, under certain conditions, convert ornithine into citrulline.

In the same connection there has been discovered a new colour test for arginine, which, although not so delicate as the well-known Sakaguchi reaction, has the advantage of much greater stability. The possibility is now being studied of applying this test as a colorimetric micromethod of arginine determination.

The department is cooperating with Dr. F. I. Lewis, of the department of surgery, in an inquiry concerning the occurrence of gastric or pancreatic enzymes in the abdominal cavity after the perforation of a peptic ulcer.

The department is cooperating also with the department of medical research in a study of the effects of high altitudes upon the blood and the respiratory metabolism of aviators. Several members of the staff have already interrupted their personal researches to take part in this project, and the others are prepared to do so whenever the occasion may arise.

Cooperation with the department of medical research is represented again in the work of one of its Fellows, Mr. C. McArthur, in the hope of adding to our knowledge of the chemical mechanism of atherosclerosis, has worked out, and has applied to human pathological material, methods for the isolation and identification of the lipides, particularly the cholesterol esters, of atheromatous deposits. These methods have already led to the isolation of two fatty acids not hitherto found in such material, one of which has been identified as linoleic acid.

It is perhaps worth mentioning that some time has been devoted to the modification (and, it is believed, the improvement) of certain methods used clinically for the determination of the urea and the non-protein nitrogen of the blood.

Pharmacology, under direction of Professor V. E. Henderson

Research has proceeded satisfactorily. Professor Lucas with a research student from the department of chemical engineering, Mr. E. D. Maher, has been making a detailed study of the isolation of strychnine; and with Dr. W. E. Brown of the anaesthetic properties of ethyl propyl ether and its estimation in anaesthetic mixtures. Dr. Brown will report on this study at the meeting of the Canadian Medical Association. Largely as a result of the experiments of Dr. Lucas, a paper was published on the assay and definition of cyclopropane. This study was undertaken for the benefit of the British Pharmacopoeia.

Dr. Ferguson has made a study of certain respiratory reflexes, which is now in press. He continued his study of the control of uterine movements. He has also developed methods for the study of blood and tissue fluids, which has been applied in conjunction with Dr. Cleghorn in adrenal insufficiency. This study was reported to the Royal Society of Canada. Last summer a study was made with Dr. Black of Swarthmore College on the transport of carbon dioxide in the blood of fresh water fish and an opportunity to complete this study was afforded by the invitation of Professor L. Irving to visit Swarthmore for the month of April. This study will soon be published.

Dr. Bonnycastle has been following up his study of the effects of drugs on normal blood pressure and in experimentally produced hypertension. Working with Dr. Ferguson he has also completed a study of the effects of drugs on the parturient uterus.

Dr. Rytel, supported by the Canadian Society for the Protection of Science and Learning, has been studying under Dr. Ferguson's direction the course of action of certain purified digitalis glucosides.

Physics, under direction of Professor E. F. Burton

Low Temperature Research:

The work in this laboratory has been done in cooperation by the following members of the staff and research students: Professors John Satterly, H. Grayson

Smith, J. O. Wilhelm, and Arnold Pitt, Dr. A. D. Misener; L. D. Armstrong, B.A. (Sask.) holder of a University of Toronto graduate fellowship, J. C. Findlay, M.A., and S. G. Ellis, B.Sc. (Wales) assistant demonstrators.

Investigations have been carried out on

(1) The viscosity and flow problems of liquid hydrogen.
(2) The specific heat of metals at the temperatures of liquid hydrogen and liquid helium.
(3) The superconductive properties of galena and its action as a rectifying crystal at low temperatures.
(4) The construction and operation of a new liquefier.

The Electron Microscope:

Due to a grant from the National Research Council it has been possible to employ Mr. Albert Prebus as a full-time worker, on this research; in addition Mr. James Hillier was taken on the strength of the department of Banting medical research and loaned to the department of physics for work on the development of this instrument. Mr. Hillier resigned in the middle of February to accept a position with Radio Corporation of America to carry on development of the microscope for that company, and his place was taken by Mr. W. A. Ladd, B.A. (Toronto). The work has continued with great success. Very satisfactory photographs have been taken with very high resolving power of particles of commercial carbon black, and other particulate materials; bacilli, such as prodigiosus and diphtheroids, and tuberculosis bacilli. Recently very good photographs have been taken of a type of filterable virus occurring in cow-pox.

The work on bacilli and bacteria has been carried out in cooperation with the staff of the Banting Institute, and that on the virus in cooperation with Dr. J. Craigie of the School of Hygiene. We are pleased to report that grants are in prospect for the coming year sufficient to carry on this work in a satisfactory manner. In addition to Messrs. Prebus, Hillier, and Ladd, this work has been participated in by J. H. L. Watson, part-time demonstrator, and Dr. L. T. Newman (during May and June). Dr. Prebus has accepted a position with Ohio State University for next year.

During the past year we have had delegations to us to see the work being done by the electron microscope from the Radio Corporation of America, the General Electric Company of Schenectady, the Eastman Kodak Company, Rochester, Ohio State University, the Massachusetts Institute of Technology, and Merck and Company, New York.

Geophysics:

(1) By Professor Lachlan Gilchrist, assisted by J. K. Leslie, B.A.Sc., in co-operation with the Ontario Hydro Electric Commission: Magnetic methods were applied in the search for a deeply buried iron excavator lost in a land slide. The excavator produced a small magnetic anomaly which was superposed on a larger anomaly due to the steel pillars of an adjacent dam. Careful investigation of these anomalies was successful in locating precisely the position of the excavator which was subsequently salvaged. This experiment also provided a test for the magnetic theory associated with such anomalies.

(2) Professor Lachlan Gilchrist, assisted by C. J. Chapman, K. W. Fritzsche, A. R. Clark, M.A., and J. W. Britton, B.A., in co-operation with the Kennecott Copper Company. The Alderson MacKay Exploration Company and the Aldermac Copper Company, carried out during the summer of 1939 and the winter of 1939-40 sub-surface investigation of mining properties by the correlation of the results of the following work:

(*a*) magnetic, self potential and electrical resistivity explorations on the surface of the ground and

(*b*) electrical resistivity explorations in deep drill holes. The sub-surface conditions portrayed by the explorations agreed very closely with the conditions found by subsequent drilling.

(3) Dr. Arthur Brant led a geophysical party employed by the Ontario Department of Mines in the region of Little Long Lac. A geophysical and geological survey of some one hundred and fifty square miles was carried out.

(4) Dr. Arthur Brant, assisted by Messrs. Clark, Dexter, White and Ofenheim continued during January, February and March 1940, the investigation of the iron deposit at Steep Rock Lake—the deposit discovered in the previous winter. The work was carried out on the ice covering the lake and further distribution of this valuable deposit was indicated. Electric, magnetic and gravitational methods were used in this investigation. This work was made possible by the generosity of Mr. Joseph Errington, to whom we are also indebted for the gift of an Eötvös Torsion Balance.

(5) Through the generosity of Mr. Hans Lundberg of Hans Lundberg Limited the following research work has been initiated and carried out this year:

(*a*) Under N. B. Keevil, B.Sc. (Sask.), Ph.D. (Harvard) (assisted by R. F. Errington, B.A.) researches on the geophysical applications of radioactivity were commenced this year. Radioactivity determinations of selected rocks over the earth's surface are most important in problems concerned with the heat of the earth and the temperature gradient. Improved simplified methods are being developed for finding the radioactive heat production in various rocks. The helium content of ordinary rocks is also being determined, together with the radioactivity measurements. This permits a calculation of the age of the rocks and so provides more accurate information for geochronology.

In addition to the academic aspects, geological age determinations promise to be of economic value by clarifying the time relationships between important rocks and by establishing genetic relationships between ore minerals and certain rocks.

(*b*) J. M. Trott, B.A., gave his attention to the subject of spectroscopic chemical analysis in order to carry out analyses, both qualitative and quantitative, of ores and, also, of soils and vegetation in the neighbourhood of mineral deposits.

(*c*) Dr. S. Levine, assisted by Dr. Brant, investigated the methods of converting gravimetric measurements into usable geophysical facts, and has succeeded in simplifying this procedure considerably.

Mr. Lundberg contributed the salaries of Dr. Keevil, R. F. Errington, J. M. Trott, and most of that of Dr. S. Levine, in addition to purchasing a great part of the apparatus used in the age of rocks investigations.

Spectroscopy:

Atomic Spectra—The following problems in the field of atomic spectra were investigated during the year:—the multiplet and hyperfine structures of the third spectrum of thallium; the hyperfine structures, particularly the isotope shifts, in the first spectrum of thallium; and the magnetic hyperfine structures of lines of the third and fourth spectra of phosphorus. These researches were carried on by Mr. J. Convey, Mr. W. M. Gray, and Mr. Gray and Mr. Levinson respectively, under the direction of Professor M. F. Crawford.

Molecular Spectra—The new techniques in Raman spectroscopy developed in the previous year by Dr. H. L. Welsh and Professor M. F. Crawford were used to investigate the cis-trans isomerism of the unsaturated fatty acids, and to measure accurately the polarisation of Raman lines of a number of substances. Mr. P. J. Sandiford and Mr. G. D. Scott cooperated with Dr. Welsh and Professor Crawford in this work.

Dr. Elizabeth Allin and Dr. Welsh have investigated the variation of intensity of Raman lines with change in temperature of the scattering medium.

Spectrographic Chemical Analysis—The equipment for analysis by both

emission and absorption spectra has been used to make a number of analyses of widely different materials as follows—

W. M. Gray—Analysis of strontium and barium salts
G. D. Scott—Spectrophotometric investigation of blood samples
H. L. Welsh—Examination of magnesium spark
Analysis of blood for rubidium
J. M. Trott—The analysis of platinum ores

Much of the equipment used in spectrochemical analysis was made available to Dr. Beamish and his associates in the department of chemistry.

Professors H. J. C. Ireton and M. F. Crawford have been associated with the work done in spectrochemical analysis.

Other Investigations:

Professor John Satterly—A study of the thermo-elastic properties of india rubber has been started and some interesting results obtained.

Professor H. A. McTaggart—The work on the examination of the optical properties of surface films is being continued.

Professor Arnold Pitt and Mr. E. P. Hincks—Work was carried on towards the development of an ultrasonic detector. An ultrasonic echo sounder for determination of stratified soil depths is in process of construction.

Dr. J. M. Anderson, with the assistance of Mr. C. Herald, who left in December, has been continuing work on the duration of excited states of Argon II.

Since December, 1939, Professor J. O. Wilhelm, S. G. Ellis and J. V. Rigbey have been cooperating in some war work under a Committee on Aviation Medical Research set up by the Department of National Defence under the Chairmanship of Sir Frederick Banting. In June, 1940 this Committee became an Associate Committee on Aviation and Medicine of the National Research Council. Mr. Rigbey left for other work in May, and the investigation is now being carried on by J. C. Findlay and S. G. Ellis under the direction of Professor Wilhelm.

During the past year two of our research men, Dr. J. Convey, and Mr. W. M. Gray, have joined the Canadian Navy and have been seconded to the British Admiralty for special work in wireless telegraphy.

Although this additional item may not be included under research it probably ought to be recorded somewhere in such a report,—Due to a grant from the Riverdale Kiwanis Club it has been made possible for the department to conduct a two-months course in advanced wireless telegraphy, to prepare additional men for this Admiralty service. This course began on June 17, and will finish probably on August 17, 1940. Staff members participating in this course are Professors Burton, Satterly, Pitt and Dr. J. M. Anderson.

Students listed below have been carrying on their research work under the following awards: L. D. Armstrong, University of Toronto Open Fellowship; National Research Council,—Bursaries, W. A. Ladd, H. L. Osmund, C. M. Penner; Studentships, J. Convey, W. M. Gray; Fellowships in Geophysics,—the gift of Mr. J. Errington,—A. A. Brant, A. R. Clark; the gift of Mr. Hans Lundberg,—N. B. Keevil, R. F. Errington, J. M. Trott, S. Levine.

Radon Seed Production:

The apparatus for the production and quantitative calibration, of radon seeds, which is the property of the Provincial Government, but is under the direction of the director of the McLennan Laboratory, has been operated very satisfactorily during the past year by Mr. A. W. Love, a graduate student.

Physiology, under direction of Professor C. H. Best

An advanced course in physiology has been given to the graduates of the biological and medical sciences course (Third Year Medicine—Second Part), and thus for the first time to a class of students who had already completed their

medical work in this subject. Teaching of the medical students proceeded in much the same way as last year.

The first reaction to the war situation in September was that all researches other than those intimately concerned with the problems of military medicine should be discontinued. It soon became apparent, however, that only a limited number of these problems were available and that certain peacetime researches should be continued until the military authorities should see fit (1) to advise that problems suggested to them by our staff should be attacked, or (2) to suggest other problems to us. A number of war researches have been initiated during the year. The concentrated serum project in which various members of this department have been interested has been described elsewhere.

Lectures on heparin and thrombosis, the prevention of diabetes, on experimental shock, and on the concentrated serum project have been given during the year by the head of the department. The Hughlings Jackson Memorial Lecture in the Montreal Neurological Institute, lectures before the Medical Students' Undergraduate Association of McGill University and the McGill branch of the Alpha Omega Alpha Society, lectures during the celebration of the fiftieth anniversary of the founding of the University of Minnesota Medical School, a lecture before the New York State Medical Society and one to the Boylston Medical Society at Harvard Medical School, were delivered. Invitations to give the Robert Campbell Memorial Lecture at Queen's University, Belfast, and the John Mallet Purser Lecture at Trinity College, Dublin, were received.

With the aid of Miss H. J. Bell, Dr. R. E. Haist and Dr. Best have continued their researches on conditions affecting the insulin content of the pancreas. They have found that the administration of insulin to fasted animals or to those receiving either a diet rich in fat or a balanced ration produces a fall in the insulin content of pancreas. The most dramatic effects are obtained in the fasted or fat fed animals which receive insulin. Dr. Haist has shown that this effect of dietary changes can be produced in the complete absence of the pituitary gland. He has assisted Dr. A. W. Ham in extensive studies on the histological effect of anterior pituitary extracts.

In Dr. N. B. Taylor's section research was continued upon renal hypertension; very interesting results in this field were obtained last year. Two papers were published—one last autumn, the other this spring—upon the effects of encasing the kidney in a cast, and thus preventing hypertrophy of renal tissue, after removal of the opposite kidney. Increasing the renal work by dietary means while the kidney was prevented from enlarging by means of a cast caused an increment in blood pressure above that caused by a cast alone. The work planned for this year met difficulties in execution. In the first place Dr. Ian Maclachlan, who had come to the department with the intention of putting in a full year, joined the army in the early winter. Secondly, Dr. Taylor's illness from February to June terminated, for the academic year, all research work in his section.

The biophysical section, under the direction of Dr. D. Y. Solandt, has continued much of the research work on which an interim report was made last year, and has initiated several new lines of investigation. Mr. W. D. Gray has completed his study of the myoneural junction and post-tetanic facilitation. Mr. J. S. Wenzel devised and constructed equipment for determining the sensitivity of various tissues to excitation by galvanic, faradic and various frequencies of sinusoidal electric current.

The time factor of accommodation (λ) has been measured on a large number of human subjects and methods for the routine determination of this quantity have been improved. Similar measurements have, for the first time, been made on single-fibre nerve-muscle preparations in amphibians and mammals through the use of micromanipulation equipment provided by a grant from the American Philosophical Society of Philadelphia.

Investigative work on the properties of denervated muscle has continued and has been facilitated by a substantial grant from the National Foundation for Infantile Paralysis of New York. Mr. J. W. Scott has completed his study of the relation of the "reaction of degeneration" to the Sherrington phenomenon in denervated muscle. Mr. J. D. Brown has designed and constructed a needle thermocouple of unique design for the measurement of the tissue temperatures encountered in a study of frostbite. The biophysical section has cooperated with other members of the departments of physiology and physiological hygiene in work in which biophysical equipment was required.

Dr. E. T. Waters has continued his investigations on canine anaphylaxis. A study has been made of the conditions governing the production of passive sensitisation in the dog. While shock can be demonstrated in actively sensitised dogs, whether or not their sera contain precipitin antibodies, successful production of passive sensitisation has been obtained only when the sensitised donor animal possesses these precipitins.

Heparin, in crystalline condition, has been isolated from the blood of dogs in anaphylactic shock by Dr. Waters and Mr. L. B. Jaques. Using the same isolation procedures they have been unable to isolate any heparin from the blood of normal dogs. The heparin obtained from the blood of the shocked animals is identical with that which we have isolated from the liver of normal dogs. It differs chemically from beef heparin and it is a more potent anticoagulant. This clearly demonstrates, what had not been suspected, that different species may possess different heparins. With Dr. A. L. Chute Dr. Waters has shown that, as in anaphylaxis, there is a decrease in the histamine content of the plasma when minute amounts of rattlesnake venom are injected into rabbits. Dr. Jean P. Fletcher and Dr. Waters made unsuccessful attempts to obtain a crystalline derivative of the product obtained from glycogen with a glycerol extract of muscle. The identity of this product is therefore still in doubt. Some preliminary experiments were made on the conditions affecting the precipitation of proteins with solutions of ferric and potassium alums. In collaboration with Dr. C. H. Best and Dr. E. W. McHenry, tests have been made of the effectiveness of histaminase preparations, of both kidney and intestinal origin, in inhibiting histamine and anaphylactic shocks. Histaminase had no ameliorative effect. We are thus unable to support the conclusions of others who have claimed for histaminase a rôle in inhibiting the shock due to histamine and to anaphylaxis.

Dr. A. L. Chute has carried out a number of experiments, in conjunction with the staff of the Banting and Best department of medical research, in which the oxygen requirement of the isolated perfused brain has been studied with the view of determining whether this technique is useful in studying the question of oxygen want in aviators. A series of experiments on the estimation of histamine in the blood of shocked animals has also been undertaken. The major portion of Dr. Chute's time, however, has been spent in connection with the blood serum bank for the treatment of war casualties. Through his half time appointment at the Hospital for Sick Children an opportunity has been afforded to test the serum in some cases of shock.

Dr. E. Fidlar has continued experiments on blood platelets in cooperation with Dr. Waters. Heart-lung preparations have not yielded satisfactory evidence of production of platelets by the lungs. Such recovery as did occur could be interpreted as due to the disintegration of clumps. A further study is being made of the behaviour of platelets in anaphylactic shock and related states.

Dr. James Campbell's investigations in collaboration with the head of the department, Dr. Haist and Dr. Ham, have shown that insulin can protect the insulin-secreting mechanism from the destructive effects of the anterior pituitary gland extracts. In collaboration with Mr. D. F. Pen, Dr. Campbell has developed a satisfactory test for diabetogenic activity, using guinea-pigs. A test using mice is also under investigation. The fractionation of extracts with diabetogenic activity is now being investigated.

Mr. L. B. Jaques has discovered a new enzyme, which destroys heparin. This enzyme, heparinase, can be prepared from rabbit liver. It is probably responsible for the rapid destruction of heparin *in vivo*. For the work on these heparin problems, use has been made of the facilities of the Connaught Laboratories. Mr. Jaques has continued his studies on blood clotting and has collected further evidence regarding the enzymic nature of thrombin. Mr. Jaques spent considerable time in the autumn term testing out and establishing the cat toxicity test, devised by Dr. McHenry. During the winter some time was spent on heparin production and on the comparison of methods of heparin assay begun last year. More recently an investigation of the production of thrombin was begun.

Psychiatry, under direction of Professor C. B. Farrar

In our research division, conducted jointly with the department of medical research work has progressed, although somewhat retarded by staff changes owing mainly to men entering military service. Four parallel lines of investigation on series of early cases of so-called schizophrenia are being carried out. These are: (1) clinical; (2) biochemical; (3) electro-encephalographic; (4) psychological. In each of these suggestive findings have been recorded, but the work must be carried considerably further before any formal report should be made.

Psychology, under direction of Professor E. A. Bott

In the session 1939-40 thirty-three graduate students were enrolled for instruction in psychology. Two candidates completed the requirements for the Ph.D. degree and eleven for the M.A. degree. The names of these candidates and the subjects of their theses follow:

For the Ph.D. degree:

Taylor, W. S.: Measurement of change in attitude of college students in India.

Williams, D. C.: Factors relating to reading achievement.

For the M.A. degree:

Arnold, Mrs. M. B.: Changes in tension during performance of the McDougall dotting test.

Burgess, Miss M.: Characteristics of good and poor readers in the primary grades.

Duff, Miss P. B. E.: A comparative study of the background, recreational activities, school achievement and personality of superior and normal children.

Hanagan, R.: A study of the skills essential to Y.M.C.A. secretaries.

Harvie, Miss K.: A comparative study of bright and dull children of equal mental age.

MacKay, Miss C. I.: A study of consequences in preschool children.

Rae, Miss J. A.: An investigation of the factors that children appreciate or are aware of in stories.

Ross, Miss M. E.: Activity preferences of teen age girls.

Signori, E.: Discrimination conflict in rats.

Turner, Mrs. K.: A study of imitation in relation to learning.

Wright, Miss M. J.: A study of changes in negativism with increase in age (with some reference to negativism in schizophrenics).

Early in September our department elected to re-arrange our instructional work, undergraduate and graduate, in order to permit certain senior members of our staff to devote considerable time to war work. This entailed exceptionally heavy duties during the whole year both for our sessional assistants and those of our permanent staff who carried extra assignments. Academic research was necessarily sacrificed in order to do justice to class teaching.

Two post-doctoral research fellows conducted intensive studies in their respective fields, as approved by a departmental committee in charge of these projects. Miss Mary L. Northway, who held the John Northway Memorial Fellowship for a second year, completed and published her study on the Social Development of Children in a Summer Camp, as well as continuing certain methodological studies on the social adjustment of children in Toronto Schools and of young women in fraternities. Miss M. D. Salter, who held the David Dunlap Memorial Fellowship for a first year, demonstrated the practical value of certain procedures for predicting the academic success or failure of first year students in Medicine. The Medical Aptitude Test has been shown to have value, but the need of improvement in it is also evident. A plan for dealing with the individual adjustment problems of first year students is being developed as part of this project.

Professor Chant is engaged on a study of organised patterns of thought and action in student adjustment and in writing on the subject of Healthful Living and Safety for a text on Health Education for High School Children.

Professor Bernhardt has directed two studies on the neurotic behaviour of rats in the animal laboratory of the department. He is co-ordinating the work in animal psychology with studies in other university departments, particularly the departments of biology, of medical research, and the Institute of Child Study.

Professor Myers is in charge of psychological researches at the Toronto Psychiatric Hospital. With the aid of graduate students he is studying how to measure changes in mental functioning which accompany shock treatment of schizophrenia.

On the side of war work our staff has cooperated with psychologists of other Canadian Universities on a programme concerning the application of psychological methods in wartime as embodied in a memorandum submitted to the National Research Council of Canada by the Canadian Psychological Association, Sept. 15, 1939. Administrative and technical aspects of this programme have occupied a good deal of the time of all our staff. Professor Chant conducted a voluntary registration of personnel in Canada qualified to assist in psychological work. Professors Cosgrave and Line have devoted most of their time throughout the year to war problems.

The psychological war work has mainly been in three directions: A demonstration of intelligence testing for the Defence Forces of Canada; a research programme for the Air Force; studies on Public Information and Propaganda. The military testing programme, conducted by Canadian psychologists on 1500 men in four Military Districts was reported on to the Department of Defence in April, 1940. Research for the Air Force, supported by a grant from the National Research Council, was reported on in March. A larger grant for psychology in aviation was made in June, 1940, by the Council for intensive development of these studies, which is now proceeding. Professor Cosgrave is now released on part time by the University to the National Research Council for this work during 1940-41. Professor Ketchum has contributed to the work on Public Information and the Measurement of Public Opinion. A memorandum on this subject has been forwarded to the Prime Minister. Special problems for research have arisen in the military programme additional to those for the Air Force. For example, Professor Myers has assisted in an analysis of the performance of psychotic and neurotic subjects on the military intelligence tests with a view to determining personality deviations which deserve further individual study.

The past year has largely been occupied with preparatory steps. It is expected that the coming session will see the application of some of these psychological procedures for the furtherance of our national effort.

Surgery, under direction of Professor W. E. Gallie

Dr. Gordon Murray and Dr. J. M. Janes have continued their animal experiments on the use of heparin and have been able to demonstrate that after

the section of large arteries the circulation can be maintained in heparinised animals through glass tubes introduced into the ends of the arteries. In the war of 1914, Tuffier suggested the use of tubes dipped in liquid paraffin as a means of maintaining the circulation temporarily. It was seldom, however, that the tube did not plug immediately with thrombus so that the suggestion was of little practical value. With heparin these tubes can be kept patent indefinitely so that in wounds involving such arteries as the femoral it may be possible to re-establish the circulation and so save limbs and lives. Up to the present there has been no opportunity to observe the method clinically but the facts have been communicated to the War Office and it will be tried out.

Dr. H. F. Robertson has studied throughout this year the effect of the continuous direct application of solutions of certain vasodilators on the surface of the heart in animals in which ischaemia of the cardiac wall had been produced by ligation of branches of the coronary artery. Of the various drugs employed the most satisfactory have been certain pancreatic extracts. When these are introduced into the pericardium they cause an immediate and pronounced dilatation of the coronary vessels and if introduced soon enough, a marked reduction in the damaging effect of the ligation of the coronary artery on the cardiac wall. Whether these findings will prove of clinical value remains to be seen. In the meantime a preliminary report of the study has been sent to the Proceedings of the Society for Experimental Biology and Medicine.

Dr. F. R. Wilkinson, working under a grant from the Nemours Foundation, has commenced a study of the effect of the new chemotherapeutic drugs in osteomyelitis in animals.

Department of Therapeutics, under direction of Professor R. F. Farquharson

Dr. A. H. Squires has carried on the study of the effects of long continued administration of large doses of vitamin D and of dihydrotachysterol in treatment of patients suffering from parathyroid tetany.

Dr. R. A. Mustard has investigated changes in the amount of prothrombin in the blood of patients suffering from liver disease and jaundice of varying types. He has studied the effect of administration of concentrates of vitamin K and of synthetic products with similar activity in raising the lowered blood prothrombin and relieving the tendency to haemorrhage found in some of these conditions.

Report of the School of Engineering Research

The following is a statement of the researches which have been in progress in this Faculty during the past year.

Department of Civil Engineering

Under the direction of Professor Young

Lateral Support of Steel Columns and Struts. The experimental work of this research has been completed and a paper has been prepared for publication.

Department of Mining Engineering

Under the direction of Professor Lord
(with Dr. D. H. Hamly and P. F. Pullen)

Dust Quantitation by Dark Field Projection. This work was undertaken in connection with dust sampling, as used in the mining industry for the control of dusty mine atmospheres. A method of dark field projection of dust spots has been developed and the necessary apparatus is in process of assembly.

Under the direction of Professor King
(with M. Hewer)

The investigation on the soda-iron method of assaying gold bearing non-sulphide and sulphide ore has been continued to determine the best conditions

of time, atmosphere and temperature for maximum recovery. Previous work showed the benefit of additive reagents on slag and on recovery. A paper on the improved method is in preparation.

Department of Mechanical Engineering

Under the direction of Professor Angus
(with A. D. Hogg)

Aeroplane Vibration Pick-ups and Their Calibration. This research has to do with the study of vibrations in aeroplanes, and covers a theoretical study of the necessary instruments of measurement and their development. This is a continuation of work commenced by Mr. Hogg with the National Research Council. The newly designed instrument has proved not only suitable for the required purpose, but will also have a broader application to other vibration problems. A strain gauge has been made for the purpose of measuring the strain in structural members of aeroplanes or other apparatus. The experimental results of this work have been embodied in a thesis which has been presented in partial fulfilment of the requirements for the degree Ph.D.

Under the direction of Professor Allcut
(with R. J. Birss and W. A. Wallace)

The Structure and Properties of Heat Insulating Materials. Further studies were made of the transmission of air and gases through various materials. The transmission of heat through hollow glass specimens was also investigated under different conditions for the purpose of analysing the heat transmitted into its conduction, convection and radiation components, respectively.

Department of Architecture

Under the direction of Professors Madill and Arthur
(with H. S. M. Carver)

The Siting of Housing Projects in the Toronto Region. This research is an attempt to analyse (1) the origins of the present plan of the urban area; (2) the general principles that should be observed in reorganising the plan; (3) the particular replanning of the two worst housing areas in the city, showing how the general principles in (2) influence the planning of any actual site.

Under the direction of Professor Arthur

Old Architecture of Ontario. Further work has been done on recording Early Ontario Buildings. A considerable number have been found and photographed in March Township and the country bordering the Rideau Canal.

Largely owing to the encouragement of the School of Engineering Research in this work, the public has been aroused to the need for preserving old buildings. This year the very beautiful Barnum House at Grafton with the farm of one hundred acres has been purchased by the Architectural Conservancy of Ontario and will be preserved for the people of Canada. The house will be restored and will be on view this summer.

Department of Applied Physics

Under the direction of Professor K. B. Jackson
(with D. H. Hamly and W. A. Mohun)

Photographic Sensitometry. This research was continued during the session and extensive tests were made on various methods of development to determine the degree of uniformity and accuracy available.

(with L. E. Jones)

A Light Source for the Inspection of Specular Surfaces. This research was continued during the session, and a second type of source for the inspection of

calf skins and side leather has been in operation in a large tannery during the year, and has proved satisfactory. A report is in preparation.

(with V. L. Henderson)

Acoustical Absorption Coefficients. A survey of present simplified methods of measurement has been made and two have been selected for further investigation. Equipment has been designed and constructed and some tests have been carried out with promising results.

Department of Chemical Engineering

Under the direction of Professor Bain

(with N. R. Fasken, B. Marks and W. G. McElhinney)

A Study of the Oxidation of Lignin. This research has been continued and while definite progress has been made, further work will be necessary to amplify and complete the results which have been obtained.

(with S. M. Jones)

A Study of the Effect of Vapour Velocities in Fractionating Columns Upon Their Efficiency. This research has been carried out by a new method.

(with F. C. D. Wilkes and J. B. MacMillan)

An Investigation of the Action of Carbon Monoxide Upon Caustic Soda. This research has been continued, but further study of this reaction must be carried on.

Under the direction of Professor Boswell

(with L. J. Rubin)

The Synthesis of Iso Proteic Acid. The study was continued of the properties of the completely acetylated condensation product of the ureid of glucose and lactic acid.

(with M. Adelman)

The Synthesis of Inositol. This work has been continued.

(with W. H. Rapson)

The Transformation of Cellulose into Oxalic Acid. A study of the mechanism of the decomposition of cellulose by sodium hydroxide was commenced.

Under the direction of Professor Smith

(with C. H. Wastle and B. A. B. Clark)

Soybean Protein Plastics. A promising protein molding material was formed by the reaction of protein in alkaline dispersion with *B*-naphthol. This approach to the problem is different from any yet tried. This research will be continued during the coming session.

(with D. F. Hutton)

The effect of pH and of Concentration of Collecting Agents on the Flotation of Non-metallics. The captive bubble machine was used to measure the contact angle of the bubble on a mineral surface. Different types of flotation reagents were used in an attempt to determine the relation between the contact angle and its value as a flotation agent, particularly in the field of non-metallics.

Under the direction of Professor McLaughlin

(with G. L. Case and E. A. R. Pilsworth)

The Addition of Iodine to Unsaturated Compounds. A study of the manner of addition of iodine to unsaturated compounds, commenced last year, has been continued and extended to other classes of unsaturated compounds.

(with L. E. Horembala)

The Role of Copper in the Deterioration of Rubber. The work of last year upon this problem has been continued.

Under the direction of W. C. Macdonald
(with N. L. J. Mould)

The influence of the surface charge upon the use of diatomaceous earth as a filter-aid has been investigated.

Under the direction of J. G. Breckenridge

Co-ordination Compounds of Metals and Amines. The work previously carried out, the results of which have been published in the Canadian Journal of Research and School of Engineering Research Bulletins Nos. 161 and 162, has been continued.

Under the direction of G. P. Beal
(with W. M. Karn)

A Continuation of Work on the Recovery of Sulphur Dioxide Using Organic Bases. Phenyl ethanolamine and phenyl diethanolamine with ethylene glycol, and diamino isopropanol with lactic acid proved useful for the process.

(with I. G. P. Wheaton)

Further work on the electroplating of tin from a stannous acid bath using a new addition agent produced a plate which gave a negative test for porosity.

(with J. M. Ferguson)

A new type of paint drier, using co-ordination complexes of cobalt, has been developed.

Department of Electrical Engineering

Under the direction of Professor Bayly

Wave Analysis and Synthesis. Many modern problems in connection with engineering require the delineation of electric wave forms so that speech sounds, etc., may be recorded. This research is an attempt to develop simple, rugged apparatus for so doing. To further facilitate experimentation, it is also desired to develop apparatus which will imitate, for a small fraction of time, such wave forms, so that certain sounds may be set up under laboratory conditions and effects of small changes in apparatus thereby measured.

Department of Metallurgical Engineering

Under the direction of Professor Montgomery
(with Dr. C. Taylor, Dept. of Pensions and National Health, Christie St. Hospital)

Glasses Suitable for the Manufacture of Artificial Eyes. Some fifty glasses of various compositions were prepared. The composition of a glass fulfilling the requirements fairly satisfactorily for the eye ball has been determined. Arrangements are now being made by Major Bell to secure the drawing of glass tubing of this composition under factory conditions. At least five additional glasses will be necessary in order to meet the requirements with respect to iris and cornia of various individuals.

Report on Research in the Faculty of Dentistry

In the field of research progress is being made in the study of the following dental problems by members of the staff and graduate dentists proceeding to further degrees:

Dr. Harold K. Box on the cause of dental caries

Dr. Roy G. Ellis in the field of electro-deposition of metals

Dr. T. N. Scott in anatomy and histology of the semi-edentulous and edentulous mouth

Dr. H. S. Austin in a study of the enervation of the dental area with special reference to the difficulties in procuring local anaesthesia

Dr. F. D. Dempster in a study of the age at which orthodontia treatment should be commenced

Dr. Wm. Garard in the relative toxicity of Procaine and Monocaine.

Dr. G. B. Shillington's enlistment in the Canadian Dental Corps has interrupted his investigations, while Dr. F. M. Lott completed his study on dentistry as applied to the defence forces of a country and was awarded the degree of Ph.D. on this thesis.

The investigations into the condition of the teeth of the Eskimos in the Western and Eastern Arctic carried on by Drs. Roy G. Ellis and Charles H. M. Williams will be continued this summer by Dr. R. J. Tickle, a graduate of this year's class, in the west, and Dr. W. D. Cavanagh, a member of our staff, in the east.

(14) PUBLICATIONS

FACULTY OF ARTS

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Infeld, L. and Wallace, P. R.—*Equations of Motion in Electrodynamics.* (The Physical Review, Vol. 57, pp. 797-807, 1940.)

Stevenson, A. F. C.—*A method for improved calculation of energies of two-electron configurations from Hartree functions.* (Phys. Rev., Vol. 56, pp. 586-593, 1939.)

Department of Archaeology

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A Golden Nike from the Athenian Agora. (Athenaika: Studies in the History of Athens Presented to William Scott Ferguson (Harvard Studies in Classical Philology, Special Volume, Cambridge, Mass., 1940), pp. 300-325, frontispiece of volume, 8 figs. in text.)

White, W. C.—*An Album of Chinese Bamboos.* (University of Toronto Press.)

Three Chinese Bamboo Poems. (Asia, New York, October, 1939.)

Department of Astronomy

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Millman, P. M.—*The Perseid Meteor Shower, 1939.* (Communications from D.D.O., No. 5, 1940.)

General Instructions for Meteor Observing, Revised 1940. (Communications from D.D.O., No. 6, 1940.)

Photographing the Recent Grouping of the Planets. (Journal R.A.S.C., Vol. 34, p. 87, 1940.)

The Falling of the Stars. (The Telescope, Vol. 7, p. 57, 1940.)

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The Cerebral Cortex in some Tinamidae. (Jour. Comp. Neur., Vol. 72, pp. 299-328, 1940.)

Vascularity in the Brains of Tailed Amphibians. II. Necturus Maculosus Rafinesque. (Proc. Amer. Phil. Soc., Vol. 82, pp. 395-410, 1940.)

Dymond, J. R.—*Canadian Conservation Problems.* (Bird Lore, 41: 145-146, 233-237.)

Cod X Haddock Hybrids. (Can. Field-Nat. 53: 91. Sept., 1939.)

Arthur Philemon Coleman. (Can. Field-Nat. 53: 79. Sept., 1939.)

Zoology in Canada in A History of Science in Canada. (Ryerson Press.)

History of the Royal Ontario Museum of Zoology. (Contr. 18, R.O.M.Z.)

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The Sensitivity of the Oxygen Consumption of Yeast to Cyanide. (Am. J. Physiol., Vol. 126, p. 491, 1939.)

Ford, Miss N., McCreary, J. F., and Brown, A.—*Evidence of Monozygosity and Disturbance of Growth in Two Pairs of Twins with Pyloric Stenosis.* (Amer. J. Dis. Child.)

Fry, F. E. J.—*The position of fish and other higher animals in the economy of lakes.* (Problems of Lake Biology, Science Press, pp. 132-142, Lancaster, Pa., 1939.)

A comparative study of lake trout fisheries in Algonquin Park, Ontario. (Publications of the Ontario Fisheries Research Laboratory, Vol. LVIII, University of Toronto Studies, Biological Series, No. 46, pp. 1-69, 1939.)

Fry, F. E. J. and Black, E. C.—*The influence of carbon dioxide on the utilisation of oxygen by certain species of fish in the Toronto region.* (American Journal of Physiology, Vol. 126, No. 3, pp. 497-498, July, 1939.)

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Races and Homing Instinct—a further paper. (Salmon and Trout Mag. No. 96, pp. 233-237, Sept. 1939.)

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A preliminary list of the Odonata of Saskatchewan. (Can. Ent., LXXII, 1940, pp. 26-35.)

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(15) REPORT OF THE DIRECTOR OF UNIVERSITY EXTENSION AND PUBLICITY

(*W. J. Dunlop, Esq., B.A., B.Paed.*)

The highlight of the year in this Department has been the new courses in business. The Canadian Credit Institute asked for a series of ten lectures on Foreign Exchange, a problem which is naturally of much concern to members of that organisation. The Advertising and Sales Club of Toronto requested a second series of ten lectures on Marketing. As there had been a course on this subject in the previous session, it was necessary to arrange a series on other topics in the same field. The Investment Dealers' Association of Canada intimated that a series of ten lectures on Investments would be welcomed by its members. These three requests were taken into consideration by the staff of the department of political economy and the three series of ten lectures each were arranged to commence late in January. The total enrolment in the three reached the high figure of five hundred and seven and the students, all of them adults, seemed enthusiastic regarding the instruction received which, it was said, was exactly what they required. For the most part, the lectures were given by experts in the various fields who are not members of the staff of the University. In response to many requests, all these lectures have been published in book form by the University of Toronto Press and a remarkably good sale of each book is already assured. Of the book on Foreign Exchange and Investments, the Canadian Credit Institute has already purchased two hundred copies for its members, especially for those in other Provinces of Canada. By means of these three series of lectures, business men and women have received information which is of immediate use to them; they have gained a certain inspiration for further study; and two valuable standard books of reference have been produced.

Last autumn the Senate of the University authorised the establishment of a Certificate Course in Business. This course is intended to afford to graduates of the High Schools of Commerce a means of pursuing their studies further; it offers an opportunity also to young people engaged in business to improve their qualifications for promotion. In this course the most important subjects are accounting, economics, and mercantile law. All instruction is given in the evenings. In each session a student may take instruction in two subjects and the whole course is covered in three sessions. Although this course commenced late, it attracted an excellent type of student. Each instructor has reported that those in his class were among the most earnest and industrious students that he has ever taught. In the establishment and the operation of this course the department of political economy and the department of law co-operated most effectively. Possibly one might venture to make a forecast that this course,

commencing in a modest way, may be the basis, in later years, for a School of Business Administration.

A third new venture has been the establishment, in co-operation with the Fire Marshal of Ontario and the Dominion Association of Fire Chiefs, of courses of training for firefighters. During the last week of October a four-day course was given in the Mining Building and it is interesting to note that this was the first course for firefighters ever given in Canada. Another course was arranged in May and was held in the Collegiate Institute in St. Catharines; a third course was held in the High School at Kirkland Lake in June. The attendance at these three courses was one hundred and ninety-two. In each case, the men in attendance expressed their appreciation of the facilities arranged for them. The value of courses such as these consists not only in the information imparted but in the impetus given to persons of mature age to devote a certain amount of time and thought to real study.

The outbreak of war brought a responsibility of a new type. The Citizens' Committee for Troops in Training included among its duties the education of officers and enlisted men. Canadian Legion War Services Incorporated also undertook to see that facilities for education were made available to the Troops. Each of these organisations turned naturally to the Canadian Association for Adult Education. The director of this department, who is also chairman of the Executive Committee of the Canadian Association for Adult Education, was asked to assume the chairmanship of the Committee on Education and to assume, in general, responsibility for the education of the Troops in Military District No. 2. Representatives of the four English-speaking universities in Ontario were called together in January to arrange a modified junior matriculation for members of the Army, Navy and Air Force. A five-subject matriculation was agreed upon and was approved by the four universities. The Senate of the University of Toronto recommended that successful completion of a four-year course in a recognised Vocational School be considered as the equivalent of junior matriculation for purposes of admission to and promotion in the service. This recommendation was adopted by the Department of National Defence. In January, classes in conversational French and German were established in Parkdale Collegiate Institute with an enrolment of approximately three hundred. Seven professors from the departments of French and German in this University undertook the instruction of the seven classes and all went well for a few weeks until a good many of these students were sent overseas. Then a fresh beginning was made and it was found that the chief interest was in obtaining junior matriculation. Volunteer teachers were obtained from the staff of the University of Toronto Schools and from the staffs of the secondary schools in Toronto and classes were established in algebra, geometry, and French of middle school grade. Other classes were commenced in conversational English, business English, and accounting. Correspondence courses have been supplied to enlisted men at Camp Borden. Many individual cases have been dealt with and soldiers and airmen have been given educational prescriptions which they will probably follow. In all the plans for education of the troops the director of the Canadian Association for Adult Education has co-operated magnificently in this Military District as he has done throughout Canada. In making up the total of the registrations in this Department during the session, no account has been taken of classes or correspondence courses for enlisted officers and men. While this work naturally presents a good many difficulties, a foundation has been laid for a scheme of education which will be necessary when rehabilitation becomes the important factor. The Citizens' Committee for the Troops in Training has given every consideration to the necessity for education and has been ready at all times to make every provision necessary for this purpose.

In June of this year the first graduates in Aerial Navigation received their diplomas. Fourteen of them passed clear, three had one or two conditions, and there were no failures. Seven of these men were taken immediately as navigation

instructors in the R.C.A.F. while others were given similar positions with flying clubs. None of these graduates are unemployed. As it happens, they finished their course at exactly the time when their services are most needed. The Link Trainer, which was loaned to the University by the Dominion Government, has been an important asset in a great many ways. It will probably be in use throughout the summer for the training of prospective pilots.

Six hundred and twenty-two teachers have taken instruction leading to the degree of Bachelor of Arts. Of these, some have attended the Summer Session but the majority have been able to take advantage of the Teachers' Classes which are held at the University and elsewhere in the evenings during the regular session. In addition to these, one hundred and twenty-five teachers attended the Summer Session for the purpose of taking instruction leading to degrees in pedagogy; and there were six who were working towards specialist certificates. The facilities offered to teachers constitute, in many ways, the most substantial part of the work of University Extension because teachers are being given an education which enables them not only to improve their own status but also to do better work in the instruction of the boys and girls of Ontario.

The two-year diploma courses in Occupational Therapy and Physiotherapy are becoming more popular every year. Indeed, so many young women wish to take either one of these courses that the classes are growing almost beyond the limits of the available accommodation. No applicant who lives in Ontario and is fully qualified is refused admission to these courses but it is possible to accept only very few from the other Provinces of Canada and it is never possible to accept any applicant who lives in the United States although a great many applications are sent in by young women who live south of the border.

The outbreak of war affected the attendance in the Evening Tutorial Classes. However, the total enrolment was 1,872. The subjects of instruction were: accounting, advertising, aerial navigation, air conditioning, art appreciation, art of the theatre, authorship, celestial navigation, chemistry, cost accounting, economics, English composition, English diction and speech, French, German, gymnastics, dancing and swimming, industrial and business organisation, interior decorating, investments, journalism, lip reading, magazine writing, mercantile law, music appreciation, nature study, philosophy, physical chemistry, psychology, public speaking, purchasing, secretarial practice, short story seminar, Spanish, the world today. The evening classes in aerial navigation were attended chiefly by men who had been pilots in the previous war and who were anxious to brush up their knowledge of flying in order to qualify themselves as instructors if their services should be required. There were three evening classes in aerial navigation with a total enrolment of one hundred and twenty-five.

The short courses in Social Case Work were given in co-operation with the department of social science. These were refresher courses intended for persons engaged in social service. The enrolment in classes for manual workers, arranged by the Workers' Educational Association, showed a decrease from previous years, probably on account of war-time conditions.

The total number of students actually enrolled this session for continuous courses or classes in the Department of University Extension is 5,190. The decrease has been almost entirely in the voluntary classes held in the evenings (those for manual workers as well as those for the general public) which do not lead to any certificate, diploma, or degree. This figure does not include those who attended extension lectures, farmers' classes, or soldiers' classes.

Correspondence courses have been carried on, as in previous years, in Arts subjects for those who are preparing for the Summer Session; in upper school subjects, for teachers who are working for a higher certificate; in commercial subjects, for teachers who wish to become commercial specialists; in the subjects of the courses given by the Canadian Credit Institute, the Chartered Life Underwriters' Association, the Certified Public Accountants' Association, and the

International Accountants' and Executives' Corporation. In these correspondence courses there were seven hundred and seventy-six students.

It might be assumed, and with reason, that there would not be very much demand during this session for extension lectures but there were one hundred and thirty-six of these. The lecturer goes on invitation and the organisation which asks for the lecture pays the travelling expenses and a small honorarium. Lectures were given as follows: Barrie, one; Belleville, three; Blenheim, one; Bowmanville, three; Brampton, one; Collingwood, three; Guelph, five; Hamilton, four; Kitchener, one; Listowel, one; Niagara Falls, Ontario, four; Niagara Falls, New York, one; North Bay, one; Oakville, one; Oshawa, one; Owen Sound, one; Palmerston, one; Peterborough, one; Pickering, three; Picton, one; St. Catharines, five; St. Thomas, one; Sarnia, two; Tavistock, one; Tillsonburg, one; Toronto, eighty-eight. These included lectures to Canadian Clubs, Community Clubs, Reading and Study Clubs, Women's Institutes, Teachers' Institutes, Masonic Lodges, Home and School Clubs, Y.M.C.A.'s, Lion's Clubs and business organisations. Lecturers were drawn from almost every faculty and department of the University.

In my report of last year I pointed out that the unsolved problem is the service which the University can render to the young men and women on the farms of Ontario. Some progress has been made towards a solution of this problem and classes have been carried on, for several weeks, in different parts of Ontario, notably in the Counties of Oxford and Simcoe and in the District of Muskoka. No account has been taken of the numbers enrolled in these classes because this is only an experiment in the meantime. It may be possible next year to proceed further and to render some direct service of a more substantial nature to the farmers of this Province.

As in previous years, I have addressed the students in the seven Normal Schools of Ontario and in a good many Collegiate Institutes, High Schools, and Continuation Schools. Many parents bring their sons and daughters to my office to ask for information about courses given by the University. Much time is taken in dealing with individual cases both in my office and at the schools visited. However, this seems to be a service which is greatly appreciated. Nowadays there are so many courses that both parents and young people are at a loss to know how to choose the course for which the individual is best fitted.

University publicity has been carried on as in previous years but it would seem that the University has been given a greater amount of favourable publicity this year than in any previous year. Of course, there have been many new developments during the year and these have been commented upon in almost all the papers in the Dominion. The semi-weekly parcels of newspaper clippings seem to be larger each month. News items are released to the papers and to the Canadian Press almost daily and articles are written for papers and periodicals from time to time. In brief, the University is getting all the publicity that a University can possibly obtain and really more than could reasonably be expected when the papers are almost filled with news of the war.

(16) REPORT OF THE DIRECTOR OF THE DEPARTMENT OF SOCIAL SCIENCE

(Miss A. C. McGregor)

This session marked the 25th anniversary of the founding of the Department of Social Science. The event was commemorated by a series of public lectures arranged in co-operation with Professor Innis and members of the staff of the course in sociology of his department. Two of the nine distinguished speakers

in the series, Professor R. M. MacIver and Professor E. J. Urwick, were former acting directors of the department of social science.

Other special courses were given during the year. One in case work was arranged in co-operation with the department of university extension, the lecturer being Miss B. M. Finlayson. Another, also in case work, in which the lecturer was Miss May Turner of the State Welfare Department of Connecticut, was made possible by the generosity of Mrs. W. J. Hanna of Sarnia and the co-operation of Mr. W. J. Dunlop and his department. These refresher courses served senior supervisors and case-workers in the social agencies who feel it important to keep in step with current thought and practice. Such courses are an important factor in raising the level of field-work supervision. Miss Turner also participated in the regular teaching of the department, thus helping to relieve department pressure.

The department's twenty-fifth year was clouded by the unexpected resignation of Professor A. E. Grauer, who returned to British Columbia as Executive Secretary of a large corporation. During his two years as Director of the Department, Dr. Grauer had advanced its work and had won the respect and co-operation of social workers in the community. The wide inquiries which were directed by President H. J. Cody led to the appointment as associate professor of Dr. Stuart K. Jaffary, formerly a member of the staff of the School of Social Work, Tulane University of Louisiana. A graduate of the University of Alberta, and of the School of Social Service Administration of the University of Chicago, Dr. Jaffary is experienced in the teaching and practice of social work. Upon joining this staff in February, he assumed the major part of Dr. Grauer's teaching duties and, although these had to be condensed into four months of teaching, he was also quick to identify himself with field work planning in the school and in the community.

Throughout the session weekly meetings of the full-time staff were held as well as two meetings of the full-time teaching staff and two conferences with senior field-work supervisors. This was felt to be a valuable means of achieving a closer integration of the department's work.

During the year of re-organisation the department found itself deeply indebted to the administrative officers of the University, to the Senate's Committee, and particularly to its Chairman, Professor H. A. Innis, as well as to the part-time lecturers and field-work supervisors, whose interest and co-operation kept the course at a normal level.

During the year the enrolment of students was increased, numbering 47 in the first year, as against 44 last year, and 23 as against 19 in the second year. The total enrolment for the year was 122, made up as follows: 70 full-time students and 20 occasional students, with 32 additional occasional students who registered in the Easter term.

At the June graduation 24 diplomas were awarded and it is expected that in October 17 students now completing field work will be eligible for diplomas. Fifteen of these are members of the "special status" group. At the time of graduation 17 had obtained positions and several appointments have since been made. Thus a department founded 25 years ago, at the beginning of the last great war, is called upon to help provide workers for community service in the present time of crisis.

(17) REPORT OF THE DIRECTOR OF THE SCHOOL OF NURSING

(Miss E. K. Russell, B.A., D.C.L.)

The school is concluding an extremely busy year with further development in the number of its students and in the variety of its work. This was felt particularly in the demand for special post-graduate studies by a larger number

of advanced students than in any previous year. Probably this growth has reached its peak under present conditions: indeed it must be so until the resources of the school are increased, and improved accommodation is forthcoming. However it is expected now that war conditions will be the limiting factor: certainly these will interfere with the trek of students from abroad. On the first day of September last a group of these graduate students from Europe arrived in Toronto just in time to hear war being declared. Through a bitter year of suffering they have remained and just now have completed their courses, though one by one they have had to realise that they may never take up the special work for which they were preparing.

At present this school is watching closely the methods of the medical school in its severe sifting of students during the first year. Although forced in these early days to proceed slowly in such a matter, nevertheless we hope to follow the example just quoted and thus to prepare workers capable of giving leadership in due time. As a further step toward this objective, the school is to offer an advantageous arrangement of its general course—with a more substantial content—to certain graduates of the Arts Faculty of this University. The announcement concerning this is set forth in the 1940-41 calendar.

Already the coming year is casting its shadow before us. In times of war and emergency nurses have a special service to offer in connection both with hospital work, and also in the wide variety of community activity that is summed up under the title of public health work. Already we are dealing with special requests for teaching that will help nurses to meet the demands thus laid upon them. Our activities in this direction during the coming session will include work of a formal nature, under the usual conditions, and also informal arrangements for service, in various directions, from the staff and the school.

At the close of the year we record with deep sorrow the loss of a great friend in the person of Dr. FitzGerald. Having helped to initiate these formal courses in public health nursing in 1920, Dr. FitzGerald has given wise and powerful support during the twenty years that have elapsed since then. It is not too much to say that the school in its present form owes its very existence to him; thus we face the future with a great sense of loss. Though we must lose his personal presence, his work will live on and, if the standards that he set are to be maintained, this work must be of a very high order.

(18) REPORT OF THE DIRECTOR OF THE DEPARTMENT OF MILITARY STUDIES

(*Major M. Barry Watson, m.s.c., C.E., M.E.*)

I have the honour to report as follows on the work of this Department during the academic year 1939-40.

Due to the outbreak of war early in September and the general interest thereby awakened in military studies, also to the fact that the Council authorised students in the general and Honour Courses in all years to substitute Military Studies for certain other pass subjects, the enrolment in this department increased twentyfold.

The enrolment in the special voluntary classes, which were opened this year to university graduates, also increased to about seventeen times its usual number; the total number of students given instruction in this department being 1964. These voluntary courses, which lead to qualification for Commissions in Canada's fighting services were, for the senior years only, condensed into one year; and a considerable number of these students in their final year have succeeded in obtaining such Commissions, but the exact number cannot be determined at any moment.

Several important changes in the curriculum were inaugurated with promis-

ing results, and further changes are being introduced in which other teaching departments are co-operating.

This department has been most fortunate in having at its disposal the new commodious quarters and the equipment of the Canadian Officers Training Corps Contingent.

(19) REPORT OF THE UNIVERSITY HEALTH SERVICES (MEN)

(George D. Porter, M.B., Director)

The report of the year shows that there has been:—

Examinations:—

First Year Students	967
Second " "	718
Seniors	834
Total	2519

There were also eighteen re-examined by specialists.

This is the largest number we have so far examined.

The results of the examinations this year were very satisfactory. The physical condition of a large majority of students is excellent, only eighteen being unfit for physical training. This is slightly better than last year's very fine record.

Results:—

Those found fit for regular Physical Training	94½%
Those having some disability requiring corrective or light exercises.	4%
Those unfit for Physical Training	1½%

Those unfit for Physical Training were exempted on account of:—

Heart Trouble	5	Tuberculosis Hip	1
Recent Operations	5	Diabetes	1
Infantile Paralysis	1	Asthma	1
Rheumatism	1	Foot Trouble	1
Peripheral Neuritis	1	Streptococcus Infection	1

The average height of our first year students is 5 ft. 9¼ inches, and their average weight 145½ lbs. A loss in height over last year's record, but an increase in weight. There are 155 first year students 6 ft. and over, with an average weight of 160¾ lbs.

Improvement in the physical condition of the second year students is shown in the majority of cases. 29% had their rating raised during the year, while only 5% had their rating lowered, owing to illness or accident during the year. The great majority of senior students coming in for re-examination also show improvement in their physical condition during their course at the University.

Among 244 fourth year students examined, 224 of them either remained A.I. or those below that category had improved in health during their university course, while only 20 of them had their categories lowered.

We were again very fortunate in having no serious outbreak of any infectious diseases during the year, and the general health of the student body has been excellent.

In the absence of Dr. Gossage who has gone overseas as medical officer of his regiment, Dr. Stewart Thomson has acted as his substitute, and has attended a large number of students suffering injuries received on the campus and the gymnasium. His work has proved very satisfactory.

There were 84 students enrolled in the special classes under Mr. Martin, for correction of postural defects and on account of certain disabilities, and 14

others temporarily on account of injuries or recent illness, which prevented their taking the regular physical training classes.

Personal advice to a great many students, and lectures on personal hygiene to those in the first year taking physical training, were given by the director of Health Service. These were well attended as they have been in previous years.

The annual lecture on the University Health Service was given to the doctors taking the D.P.H. course at the School of Hygiene.

As usual a very large number of students came into the Director's office during the year for medical examinations, advice, minor treatments, vaccinations, medical certificates, etc.

We have done 167 vaccinations during the year.

As before, the first year students in mining engineering have had X-Ray examinations of the chest.

We are again indebted to Prof. Andrew Hunter, professor of pathological chemistry, for undertaking the supervision of the urinalysis in connection with the physical examination of students. These examinations shewed that 10.1% of the students had albumin, and 4.2% had sugar.

From a questionnaire suggested by Dr. H. B. Anderson regarding the prevalence of allergic manifestations, we found that among 1,000 students who were personally questioned, 13.2% had suffered from hay-fever, 2.9% from asthma, and 7.7% from urticaria. (Hives).

Illnesses and accidents for which temporary absence from Physical Training were allowed:

Illness:

Colds	167	Pharyngitis	16
Influenza	53	Bronchitis	6
Transfusion	15	Laryngitis	4
Vaccinations	3	Tonsilitis	7
Abscess	1	Mumps	2
Gastralgia	14	Thyroid	2
Arthritis	2	Hernia	1
Pneumonia	1	T. B. Test	2
Frost Bite	1	Cardiac	1
Dental trouble	4	Ear trouble	1
Sinusitis	6	Neuralgia	1
	267		43

Operations:

Appendicitis	3	Tonsils	3
Mastoid	1	Hernia	1
Sinus	1		
	5		4

Injuries:

Sprains	36	Fractures	5
Dislocations	4	Abrasions	12
Concussion	1	Contusions	5
Cuts	5	Blisters	4
	46		26

Skin Diseases:

Furunculosis	11	Impetigo	2
Ringworm	1	Pityriasis	2
Eczema	1		
	13		4

Total 408

(19) REPORT OF MEDICAL ADVISER OF WOMEN

(Dr. Jean F. Davey)

I beg to present the report of the Medical Adviser of Women for the year 1939-1940.

It is with great regret that this department records the loss suffered by the women of the University in the death of Dr. Edith Gordon. She was the Medical Adviser of Women for nearly twenty years and throughout this time devoted herself wholeheartedly to the interests of undergraduate women. She has been and will be greatly missed.

All women students entering the first year in University College and the faculties of Medicine, Household Science and Applied Science and Dentistry are required to take two periods of physical training weekly. One hundred and ninety-five such students were given complete medical examinations early in the fall to determine their fitness for such instruction. Of this number 60% were considered in first class physical condition. 35% had two or more minor defects, not sufficient to prevent physical training. These students were given remedial exercises if the defect was postural, or referred to their own physicians if medical attention was required.

5.2% of these first year students were debarred from physical training because of medical reasons and in most instances substituted rest for the period of activity. Another 7%, although physically fit, were unable to take physical training because of difficulties in time-table or distance to the gymnasium. These students were registered in honour science, medicine or applied science and substituted walks for the physical training period.

Complete medical examinations were given to 381 students registered in the upper years of University College and Medicine and in all years of the other arts colleges, as well as in the departments of physiotherapy, occupational therapy, social science, school of nursing and graduate studies.

Included in this number were 88 students graduating in arts or household science who came to the Medical Office for examination in response to a request that they be checked before leaving college, and of these, 59% were found to be in first class physical condition.

In addition to these initial examinations some 50 students were kept under observation and re-examined during the year.

Students of the Margaret Eaton School were examined to the number of 58.

Tuberculin tests were done as part of the routine physical examination in most instances and positive skin tests were X-Rayed. The X-Rays were taken through the kindness either of Dr. Grant of the Department of Anatomy or Dr. Elizabeth Stewart of the Women's College Hospital. Approximately 24.8% of the first year students had positive tuberculin tests. No active cases were discovered this year, although several were considered to be suspicious and were rechecked both physically and radiologically during the year. I believe these tests constitute a very valuable part of the work done by this department.

All women participating in university sports are required to submit certificates of physical fitness to the Secretary of the Athletic Association. Over 200 students from all faculties were examined for this purpose during the year.

In addition to the examination for sports, students constantly come to the Medical Office regarding injuries, illness or individual problems of varying kinds, and more than 700 such consultations occurred throughout the year. 217 urinalyses were done and 30 vaccinations against smallpox.

During the final examinations in April and May 33 students wrote 49 papers in the medical office when it was deemed unwise for medical reasons to allow them to write in the regular examination centres.

A course of 20 lectures in personal hygiene and first aid were given to the first year students in the diploma course in Physical Education. Twelve lectures

and demonstrations were given to the fourth year of the same course in physical examination and diagnosis.

This department has stated in previous years how inadequate are the gymnasium and recreational facilities for the women of the University. Physical training is available only for the first year students and then for less than half of the total registered number so that the large majority of women students take part in no organised sport or exercise during the college year, a lack which is greatly to be deplored.

Physical Examinations, 1939-1940:

University College—First year	173		
Second year	21		
Third year	29		
Fourth year	31		
		254	
Victoria College (all years)		49	
Trinity College (all years)		12	
St. Michael's College (all years)		8	
Medicine (all years)		14	
Applied Science and Engineering (all years)		5	
Household Science (all years)		31	
Optometry		1	
Physiotherapy (all years)		37	
Occupational Therapy (all years)		41	
Social Science (all years)		22	
College of Education		3	
School of Nursing (Undergraduate)	46		
(Graduate)	74		
		120	
Graduate Studies		11	
			608
Margaret Eaton School			58
Grand total			666

(20) REPORT ON ATHLETICS AND PHYSICAL TRAINING

(T. A. Reed, Mus.Bac., Secretary, Athletic Association)

(I) Men

I have the honour to submit herewith the report of the Department of Athletics and Physical Training for the 1939-40 session. With this is incorporated the report on competitive activities both intercollegiate and intramural, all of which are placed by the Board of Governors under the control and supervision of the University of Toronto Athletic Association.

The work in all departments showed a distinct advance over the previous year, notably in the development of the intramural programme under which 54 per cent of the eligible male students participated in some form of athletic activity. An unusually large number of senior intercollegiate championships were won this year by our university teams, i.e., twelve and one tied. There was also an increase in the use of the Gymnasium and Swimming Pool in the evenings (a privilege granted by virtue of the Athletic Fee).

Physical Training:

This was conducted as in former years. As will be seen by the schedule below a large number of first and second year men, in view of war conditions, elected to do the required work in the Canadian Officers' Training Corps, that is, 645 students as compared with 228 in a normal year. In this regard the Directorate worked in full co-operation with the Officer Commanding and the staff

of the C.O.T.C., combining a programme of physical fitness with the regular military training.

Due to the large number of students enrolled with the Training Corps, the number taking gymnasium work was considerably less, with a corresponding reduction in the number of classes, viz., sixteen each week instead of twenty as in the previous session. This year special emphasis was placed on the necessity of every student being able to swim, with the result that the number enrolled was doubled and 180 taught to swim as compared with 100 in 1938-39. There were 18 Learn-to-Swim classes each week and 31 Life Saving classes. 120 men obtained the Royal Life Saving awards.

In special classes for those suffering from temporary or permanent unfitness for the regular work, 71 were enrolled while 51 others were exempted from all physical work on medical or other grounds. Dr. Porter again repeated his valuable course of lectures on hygiene.

Enrolment was as follows:

Men students in the first and second years		1803	
From third and fourth years (being deficient in previous years)		25	
			1828
From this total must be deducted those:			
(*a*) With credit for two years physical training but repeating academic work	169		
(*b*) Exempt on medical or other grounds	51		
(*c*) Withdrawn from college during the session or registration cancelled	16		
(*d*) Failed to register	17		
			253
			1575

These 1575 first and second year men elected to take their Physical Training as follows:

In Physical Training Classes		864	
In the Canadian Officers' Training Corps		645	
In Special Classes for those physically deficient		71	
In the following Intercollegiate and Interfaculty Sports (part-time):—			
Rugby	169		
Soccer	56		
Track & Harrier	139		
English Rugby	11		
Lacrosse	56		
Volleyball	126		
Boxing, Wrestling & Fencing	99		
Swimming & Water Polo	98		
Baseball	145		
Basketball	183		
Hockey	186		
Rowing	44		
Gymnastics	24		
Tennis	4		
Figure Skating	33		
Jiu Jitsu	8		
		1381	
		2961	
Less those participating in two or more activities		1386	
			1575

Intercollegiate Athletics

The University of Toronto established a record this session in the number of Intercollegiate Championships won, viz., the Senior Boxing and Wrestling, English Rugby, Golf, Gymnastics, Hockey, Soccer, Swimming, Water Polo and Tennis, and tied with Western University for the Senior Basketball. McGill

University won the Fencing, the Harrier and Track, and Western the Senior Intercollegiate Rugby. In a four-oar Rowing competition, Toronto won from McGill.

Worthy of special mention is the winning of the International as well as the Canadian Intercollegiate Hockey Championship. The team captained by J. C. Maynard (worthy son of a worthy sire) went through the season without a defeat and brought back the championship to Toronto after seven years. Maynard, in addition to being an outstanding athlete has had a a distinguished academic career. In this, his graduating year, he was awarded the John H. Moss Memorial Scholarship, the Governor-General's Medal for the best degree (Trinity), the Prince of Wales Prize in Mathematics and the Bronze Medal in Science. He was also a member of the team representing the University of Toronto which in competition with over sixty Universities and Colleges in the United States and Canada won first place in the William Lowell Putnam Mathematical Competition sponsored by the Mathematical Association of America. He was also a member of the Athletic Directorate, a position held by his father, Dr. J. C. Maynard, twenty-five years ago.

Individual Awards were as follows, the T. H. Bickle Memorial Bursary won by G. H. Clawson, U.C. III; the Johnny Copp Memorial Trophy won by S. D. Turner, App. Sc. IV; the Don Barton Trophy won by David Craig, App. Sc. II; the Massey Trophy for Boxing won by W. D. Ramore, App. Sc. III; the Neil Buckley Trophy for Swimming won by G. H. Clawson, U.C. III; the Werry Cup for Gymnastics won by L. A. Patterson, App. Sc. IV; the McCall Cup, Individual Champion in Golf won by D. S. Morse, App. Sc. IV.

In Intermediate competition, the University of Toronto won the Tennis, Golf, Harrier, Hockey, Fencing and Swimming and tied with Western University in Basketball.

Our regular schedules were augmented by "good-will" visits with United States Colleges during the session. The Hockey team visited Los Angeles and played University of Southern California, Loyola University and Gonzaga University. Later in the year they visited St. Nicholas Hockey Club, N.Y. and Clarkson College, N.Y. The Basketball team played Niagara University, Syracuse, Cornell, Rochester, Clarkson, St. Lawrence and Detroit; the Swimming Club competed at Rochester University; the Boxing Club went to Penn State College and to Cornell and the Wrestlers to University of Buffalo and St. Lawrence University at Canton, N.Y.

Among visitors to the University of Toronto were the Harrier team of Alfred University, N.Y.; the Basketball teams of Wayne University and Clarkson College; the Fencing teams of Lawrence Tech, Detroit; Wayne University, Detroit and University of Buffalo; the Boxing team of the U.S. Coast Guard Academy, New London, Conn.

Intramural Competition

The completion of the fourth year of this programme provides an interesting survey of the increased participation of the men students in active competition. This has been greatly stimulated by the formation of more teams from the larger faculties and colleges.

In an extensive programme which included eight leagues, playing 476 games there were but three defaults and no postponements. There were 3167 individual registrations from 1824 students (an increase of 170). This means that 48.7% of the eligible student body participated in the interfaculty programme. Adding to this, the supervised inter-residence and inter-fraternity groups brings the total up to 3790 registrations from 2024 individuals representing 54% of the male student body. 31 teams played 100 basketball games, 22 teams played 70 hockey games in the Varsity Arena, a record in both cases. Adding again to the above figures the 275 students playing on Intercollegiate teams it will be shown that over 61% of the men students participate in active healthful com-

petition. This the Athletic Directorate feel is a remarkable showing, and demonstrates the value of our programme in developing and maintaining physical fitness at a time when never more needed.

The T. A. Reed Trophy for high points was again won by the Faculty of Applied Science, with Trinity College second and Emmanuel College third.

Series	Name of Cup	Winner	Interfaculty teams	Player
Rugby	Sir William Mulock	St. Michael's	9	254
Sr. Track	W. L. Rowell Memorial	Victoria		57
Jr. Track		Med.		27
Soccer	Arts Faculty	Victoria	10	180
Sr. Harrier	J. Brotherton	App. Sc.		46
Jr. Harrier		Med.		117
Hockey	W. T. Jennings	Trinity	22	369
Basketball	Clifford Sifton	App. Sc.	31	401
Box Lacrosse	Dr. W. A. Dafoe	St. Michael's	12	153
Boxing, Wrestling & Fencing	Francis Davidson	Victoria		82
Indoor Baseball	A. G. Spalding & Co.	Dent.	24	410
Sr. Swimming	A. M. Fitzgerald	U.C.		37
Jr. Swimming		Med.		96
Ind. Swimming	Durnan	G. H. Clawson, U.C.		29
Water Polo	H. P. Eckardt	Sr. Med.	11	153
Indoor Track	Toronto Cricket Club	Victoria		98
Tennis: Team	Victoria Tennis Club	Victoria		79
University Champion	F. Y. McEachren	B. W. Hall, Emman.		
Sr. Gymnastics	H. A. Wilson	Victoria		11
Jr. Gymnastics		App. Sc.		17
Volleyball	Victoria Staff	Sr. U.C.	27	321
Golf		U.C.		48
Rowing		App. Sc.		40
Squash Racquets		App. Sc.		35
Ski-ing		App. Sc.		32
Badminton		Med.		21
Jiu Jitsu				14
Figure Skating				40
				3167
Less those participating in two or more sports				1343
Number of contestants				1824

The Athletic Fee Advantages

It is three years since this fee was instituted. In evidence of the student appreciation of the privileges secured by this fee, it is interesting to note that 12,647 attended the Rugby games at the Stadium; 3,427 the Hockey games at the Varsity Arena; 11,209 the Outdoor Rink (free admission three nights a week and every afternoon); 14,853 the Gymnasium and Swimming Pool in the evenings; 59 took instruction in Figure Skating, and 305 in elementary Golf. 1,820 reduced green fees were granted by the Woodbine Golf Club; 1,389 in Riding; while the total attendance at the University Ski-ing grounds near Aurora was estimated in the neighbourhood of 10,000, or an average of 1,000 each week-end of an exceptionally favourable season.

The Varsity Arena, in addition to its normal University use, has again been available for other things. The Promenade Symphony Orchestra under Mr. Reginald Stewart gave 24 concerts on Thursday evenings from May to October with an average attendance of 4,901, the largest attendance at any one concert being 7,621 on September 28th. Several school displays, the closing exercises of the Bible Training College, a church parade of the Girl Guides, an I.O.D.E. meeting to collect clothing for Finnish refugees, a programme of Folk Dances under the auspices of the Community Welfare Council, the St. John's Ambulance Brigade, the Optimist Club, and the Boys' Brigade were among the organisations provided with facilities at a nominal cost.

The Athletic Directorate

The Athletic Directorate for 1939-40 consisted of Dr. J. A. McCollum (President), Professor T. R. Loudon, Professor S. Beatty, Dr. W. Easson Brown, Messrs. E. S. Jarvis (Vice-President), J. C. Maynard, T. V. Rutherford, D. L. Mumford, J. J. Pigott, S. D. Turner, and, *ex officio*, Dr. G. D. Porter, medical director, Warren Stevens, director of physical education and T. A. Reed, financial secretary.

By unanimous recommendation of the Advisory Board, our worthy President, Dr. John A. McCollum, Med. 1901, was elected to life membership in the Athletic Association in recognition of his services to University athletics since his undergraduate days and as a member of the Athletic Directorate since 1924. He this year completes his eighth year as President of the Association.

(20) REPORT OF THE DIRECTOR OF THE DEPARTMENT OF PHYSICAL EDUCATION FOR WOMEN

(*Miss I. G. Coventry*)

(II) Women

During the academic year 1939-40 there were 201 students registered in the physical education classes and approximately 682 class periods of instruction were given by the director and the assistant physical director Miss J. M. Forster.

Required Physical Training: The one year required physical training with an enrolment of 174 students was subdivided into ten class periods a week. This plan was arranged principally for the students who presented varied academic time-tables and it partly lessened the congestion in the undersized gymnasium and dressing-room quarters. The students enrolled in the regular gymnasium and corrective classes were required to take final tests in general gymnastics and corrective exercises at the end of the session. The annual report of these examinations including the class attendance results of the students was submitted to the Registrar of the University.

Corrective and Remedial classes: Class periods of corrective exercises were specially arranged and given to the students who were medically advised to take the special course for their benefit and welfare. When satisfactory results were obtained it enabled the individual student to return to the regular physical training classes before the end of the second term.

Number of students from University College	159
" " " " Faculty of Medicine	7
" " " " " " Applied Science	3
" " " " " " Household Science	5

Swimming: There were 288 students from all colleges, faculties and departments during the session of 7 months. Instruction was given in elementary and advanced swimming and life saving.

Number of students from University College	194
" " " " Victoria "	25
" " " " Trinity "	4
" " " " Faculty of Medicine	7
" " " " " " Applied Science	4
" " " " " " Household Science	7
" " " " Physical Education (Diploma Course)	27
Administrative Staff	20

Four Year Diploma Course in Physical Education: There were 27 students registered in the physical education course and approximately 276 class periods of lectures in the physical education subjects and 464 class periods in practice subjects were given during the college year. It is gratifying to state that the final results were most satisfactory. The women graduates who have been

granted the diploma in physical education by the University of Toronto and proceed to the Ontario College of Education for a teacher's qualification and certificate, continue to be appointed physical directors and instructors in the secondary schools of the Province of Ontario.

(20) REPORT ON ATHLETICS FOR WOMEN

(Miss A. E. M. Parkes)

(III)

I beg to present the report on Athletics for Women in the University of Toronto for the year 1939-40. This includes the organisation and supervision of all competitive athletics, both intramural and intercollegiate, and some direction of the purely recreational sports in which many students participate.

The number of students engaged in the various types of athletics has remained about the same in the last few years, as it does not seem possible to accommodate more competitors with the very limited facilities now available. The most noteworthy increase has been in badminton, as it was possible to rent three courts at the Metropolitan Church for the regular use of the students. In spite of the fact that these were so far away and were only available on the week-day afternoons, thus eliminating many students, about one hundred women in University College, Victoria, Trinity and one or two of the smaller groups paid the necessary small fee and made use of the courts. This gives some indication of the need for badminton courts, as well as other athletic facilities, on the campus.

The Association this year sponsored intercollegiate competition in tennis, swimming, basketball, badminton and ski-ing and intramural competition in all of these as well as indoor baseball, hockey, golf and bowling. In the intercollegiate tennis and badminton there were five entrants (the four Ontario universities and McGill); in the swimming, the four without McGill; while in basketball, the four original members have not found it possible to include McMaster in view of the tournament form of the meet.

The regular intercollegiate championships for 1939-40 were distributed as follows: tennis, Queen's; swimming, Toronto; basketball, Western; and badminton, Toronto and McGill, tied. The ski-ing was decided at an invitation meet conducted by McGill in the Laurentians and including teams from Vassar, Skidmore and Middlebury as well as Toronto and McGill. The meet was won by McGill, with Toronto coming in a satisfactory second.

The basketball meet was held at Toronto for the first time in four years and did much to cement the good feeling between the universities competing. The three visiting teams were billeted in the women's residences and various forms of entertainment were arranged for them during their two days' stay. The Association is especially grateful to the Men's Athletic officials for their generous assistance in arranging the meet, as well as making available the Hart House gymnasium for the games and for a dance on the Saturday night.

The intramural competitions were won as follows:

Sport	Trophy	Winner	Competitors
Tennis	Curlette Cup	Victoria	30 (5 teams)
	Univ. Champion	Elizabeth Bell, Vic. I	
Golf	Univ. Champion	Marion Walker, U.C. II	30
Baseball	Univ. Coll. Cup	Victoria II	25 (3 teams)
Basketball	St. Hilda's Cup	Univ. Coll. Seniors	150 (13 teams)
Hockey	Harston Cup	St. Hilda's	58 (5 teams)
Badminton	Badminton Cup	Univ. Coll.	36 (6 teams)
	Univ. Champion	Shirley Geldert, U.C.I.	
Swimming	Interfaculty Cup	Physical Education	40 (4 teams)
	Univ. Champion	Margaret Hall, Phys. Ed. IV	
Bowling	Univ. Champion	Ruth Publow, Vic. III	47
Ski-ing	Univ. Champion	Marion Gallie, U.C. III	16

The tennis tournament was held on the Trinity College courts, for which thanks are due to the College; the basketball games were mostly played in the Women's gymnasium at the Ontario College of Education, with the finals in Hart House; the badminton was played on the Metropolitan Church courts, the swimming training was in the Household Science pool with the final trials and the meet in Hart House; the baseball games were played in the Victoria College gymnasium, and the bowling was held in the Uptown Academy at Bloor and Yonge Streets. This is just another indication of the difficulties under which the women are forced to carry on their athletic activities.

Students from the following faculties and departments registered in one or more of the intramural activities, and still more entered into the recreational sports without registration: Arts (all four colleges), Medicine, Household Science, School of Nursing, Social Science, Physical Education, Pharmacy, Dental Nursing, Physiotherapy and Occupational Therapy.

The activities of the Association have been financed, in the main, by the receipts obtained from parking during football games. In this the Superintendent's Office has been most co-operative. Rental of the bowling alleys and badminton courts was paid from the women's share of the general athletic fee, while each student making use of these facilities paid an additional small fee to cover the rest.

The Association suffered a great loss through the death in December of Dr. Edith Gordon, who had always proved herself a friend to the athletes of the University. The appointment of Dr. Jean Davey as her successor has proved a most happy one, as in addition to her other qualifications, Dr. Davey had considerable experience in various athletic offices throughout her undergraduate course.

The Women's Athletic Directorate for 1939-40 consisted of Dr. C. C. Benson, President, Mrs. W. A. Kirkwood, Mrs. W. B. Elsley, Dr. Jean Davey, and the Misses J. M. Forster, H. R. Annesley, M. E. Casson, E. H. Goodfellow, R. A. McDonald, M. M. Mosbaugh, M. M. Pickering and A. E. M. Parkes, Secretary-Treasurer.

(21) REPORT OF THE WARDEN OF HART HOUSE

(*J. B. Bickersteth, Esq., M.C., M.A.*)

The War

The outbreak of war early in September naturally gave rise to serious doubts as to how far Hart House would be affected. It was difficult, for instance, to foresee to what extent the claims of the C.O.T.C. would make it impossible for undergraduates to give time to music, art, leisure reading, the theatre, the S.C.M. and other distinctive activities of Hart House. That there would be no violent upheaval soon, however, became clear. Undergraduates were expected, indeed were instructed, to work hard and carry on their usual mode of existence. On several occasions during the fall there was a possibility that the University might be required to house an Air Force School and in that case Hart House would have arranged to serve meals to these men but the plans did not materialise and in actual fact, except for the suspension of debates, the normal life of Hart House was singularly undisturbed throughout the academic year.

General

There has been a slight decrease in both undergraduate and senior membership owing to the war. The undergraduate membership was 3702 (excluding summer membership) and the senior membership, including faculty and graduate, was 691. This made a total of 4393, being a decrease of 101 from last year's figure. In spite of the fact that a number of young graduates joined the C.O.T.C., the senior activities of the House have been well maintained. The Revolver

Club, founded four years ago and now well established, increased its membership and owes much to the co-operation of Dr. G. H. W. Lucas. The usual annual dinners in the Great Hall included the University College Soph-Frosh and Medical Soph-Frosh Dinners, the Hart House Committees Dinner, the School Dinner, the Warden's Christmas Dinner (attended by 137 men, who could not return home for Christmas), the Aerial Navigation Dinner, the Commerce and Historical Club Dinners, the Law Club Dinner (by special permission) and the St. Michael's College Arts Dinner. The first dance of the year was the All University Fall Dance held at the end of October, which was two weeks later than last year. This function was attended by over 2100 people and was an unqualified success. Other large dances included the Medical Soph-Frosh Dance, the University College Follies, the C.O.T.C. Ball, School Night, St. Michael's College At Home and, at the end of March, Alumni Night. The University Settlement party was held shortly before Christmas. An opportunity was given for the general public to see Hart House on the last Sunday of October, when over 3000 persons were shown through the building by committee members. To the Comptroller and Miss Ransom (Superintendent of the dining hall department) must go the credit for the vastly increased number of meals served in the Great Hall this winter compared with that of last year. Under the direction of the Comptroller and Miss Ransom, a comprehensive course in all phases of food administration has been developed during the past two years in Hart House. This year, for instance, four graduate dietitians assisted Miss Ransom in the day to day problems of her department and also received lectures and general instruction in every branch of the work. Hart House, with its daily meals to undergraduates, special dinners, receptions and other parties affords an extraordinarily wide scope for such a course. The Comptroller and Miss Ransom were also able to give valuable assistance to various military units in Toronto with regard to the feeding of their troops.

By the death of the Governor General in February last, Hart House lost one of its warmest and most sympathetic friends. During their term of office Lord and Lady Tweedsmuir paid two formal and many informal visits to the House. They had a clear understanding of what Hart House was at least attempting to do for the undergraduates and never failed to give encouragement and stimulating advice.

Art

The fortnightly exhibitions held in the gallery from September to April were of great variety and interest. They were as follows: Peter Haworth and B. Cogill Haworth, John Russell, F. H. Brigden, Louis Muhlstock, F. S. Haines, travel posters of European countries, Clarence Chong, annual exhibition of photographs, work by students in the department of fine art, work of undergraduate members, paintings of Caribou Eskimo by Mrs. D. B. Marsh, work of graduate members and members of the faculty, photographs by Ronny Jaques and work of the Hart House art class. The annual photographic show arranged by the Camera Committee was of the usual high standard; the total number of entries were 175 prints, of which 109 were hung. An innovation this year was the exhibition of work by students in the department of fine art. Additions were made to the reproductions of old masters owned by Hart House and these were shown in the Print Room. This year Mr. Carl Schaefer conducted the art classes and the work of the arts and crafts group. The former were well attended but the arts and crafts group was one of the few things which quite definitely were affected by the C.O.T.C. drills and lectures but none the less managed to keep going, though with a very small number attending the classes. The Hart House collection of pictures received three additions, (1) "Maurice" by Lilias Torrance Newton, (2) "In the Woods" by Paraskeva Clark (Murray and Harold Wrong Memorial Fund) and (3) "Tobacco Patch" by George Pepper, presented

by the graduating year of 1940. A number of pictures in the collection have been repaired, cleaned and varnished by an expert at the National Gallery in Ottawa.

MUSIC

The usual series of eight Sunday Evening Concerts, four before Christmas and four in the New Year, filled the Great Hall on every occasion. Year by year we must express our gratitude to the musicians of Toronto, who make these concerts as well as the Friday Recitals possible by their generous assistance. The artists for the Sunday Evening Concerts were as follows: the Hart House String Quartet, Margaret Parsons (pianist), George Lambert (baritone), the Tudor Singers conducted by Dr. Healey Willan, Elie Spivak (violinist), Jeannette Caillé (pianist), Gordon Hallett and Clifford Poole (two piano recital) and the Hart House Glee Club conducted by Dr. Charles Peaker. The Friday Recitals attracted a large attendance throughout the year. Programmes were given as follows: Reginald Stewart (pianist), Frank Fusco (violinist) accompanied by Margaret Parsons, Grant Milligan (violinist) and Clement Hambourg (pianist), Eugene Kash (violinist) and Reginald Godden (pianist), J. Campbell-McInnes (baritone), Muriel Donnellan (harpist) with Margaret Parsons at the piano, the Joyce Trio, Wilma Stevenson Dohler (pianist), Leo Smith, Harold Sumberg and Cecil Figelski (Hart House viols) with Captain T. R. C. Goff (clavichord) and the second year B.A. Class in Music from the Toronto Conservatory, Robert Spergel ('cellist) assisted by Beanna Somerville (violinist), Mildred Spergel at the piano, James Levey (violinist) with Adolphe Koldofsky (violinist) and Gwendolyn Williams at the piano, the Hart House String Quartet and Viggo Kihl (pianist), and George Haddad (pianist). The Songsters took place as usual, affording an opportunity for members, who were not in any way trained singers, to come together under the expert guidance of Mr. Campbell-McInnes and sing folk songs merely because it gave them pleasure to do so. Large numbers attended the Friday sing songs, which owed much to Mr. Ross Workman. The Glee Club suffered no diminution in numbers because of the war. Before Christmas the usual carol concert was given in the Great Hall and also a broadcast over the C.B.C. Their season ended with the last Sunday Evening Concert. The high standard of work performed, under the brilliant direction of Dr. Charles Peaker, was this year recognised by the Board of Stewards who granted the club the privilege of bearing the name of Hart House without annual review. The experiment, whereby on several occasions leading undergraduate pianists gave short recitals in the east common room after lunch, was greatly appreciated. This year for the first time Convocation Hall was completely filled on the occasion of the annual performance of Bach's St. Matthew Passion, with the management of which the Music Committee was, as in former years, closely concerned.

LIBRARY

The war seems to have led to an increase in the use of the library. The Curator reports that an average of 150 books are read daily. About 100 new volumes were added during the year as well as several private press books. In spite of the fact that it is not practicable to establish any definite supervision in the library the number of losses is extremely small. Forty-four periodicals were available to members in the reading room. During the year three library evenings were held when Mr. Gregory Clark, Mr. Napier Moore and Mr. Hector Charlesworth addressed large groups of men on books which appealed to them. Owing to stringent economy in the finances of the House the installation of an up-to-date lighting system had unfortunately to be postponed. The library carpet, which covers the entire room, was taken up, cleaned and re-laid during the Christmas vacation.

Debates

After the most careful consideration by the Debates Committee it was thought wiser to suspend debates during the past year.

Student Christian Movement

Perhaps the most valuable contribution the S.C.M. has made to Hart House during the past year has been the series of midday addresses held throughout the winter, when speakers dealt with the relation of Christianity to war. Among the speakers were: G. R. Treviranus, Canon W. W. Judd, Dr. C. E. Silcox, B. K. Sandwell, the Rev. J. R. Mutchmor, Archduke Felix of Austria, Norman Sommerville, K.C., Raymond Booth, Rabbi M. Eisendrath, Professor E. Gilson, Professor W. T. Brown, the Rev. F. D. Coggan, Dr. George Pidgeon, Dr. W. C. Lockhart and Dr. J. R. P. Sclater. These addresses, followed in many cases by keen discussion, afforded a really valuable opportunity for undergraduates to talk over their problems. On several occasions the Music Room was completely filled and there was always an excellent attendance. The outstanding event of the year was the Student Volunteer Conference held in the University during the Christmas vacation. Hart House was used by the delegates who were drawn from all over Canada and the United States. The speakers included Robert Mackie, D. T. Niles of India, Dr. Paul Harrison of Arabia, T. Z. Koo, Professor Pitt Van Dusen and Dr. J. L. Hormatka of Prague. On the last night of the old year a very remarkable gathering was held in the Great Hall when greetings from the various delegates were given in twenty languages and students of the various national groups made musical and dramatic contributions to the programme. Just before mid-night Dr. Robert Mackie conducted a short watch-night service and an excellent chorus, assembled from the delegates, sang Bach and other special music. In the Faculty of Medicine, the Faculty of Applied Science and Engineering and also in Trinity College, there has been a greatly increased interest in the movement. Holy Communion has been celebrated regularly in the chapel of Hart House and special addresses were given during Holy Week. In May, 40 students attended the annual spring camp. Dr. Wilfred Lockhart severed his connection with the S.C.M. in April and has undertaken important work in the city. On behalf of all members of Hart House the Board of Stewards informed Dr. Lockhart of their deep appreciation of the admirable work he had done during the past five years in deepening the spiritual life of Hart House, not only by his devotion to the principles in which he believed but also by his sympathetic understanding of the religious problems of the student of today. In the New Year members of the S.C.M. worked with the Students' Administrative Council in collecting money to help their fellow undergraduates in distress in Europe and the Far East, sending a considerable sum for this purpose to the headquarters of International Student Service in Geneva.

Theatre

The theatre has been extensively used by university dramatic organisations. Trinity College and Victoria College have both produced plays this season and the Victoria College Music Club gave five performances of "Patience". The University Drama Festival took place early in January when Trinity, Victoria and University Colleges entered plays, the award being given to University College. Under the auspices of the University Drama Committee fifteen plays were produced on Wednesday afternoons, each college in turn making itself responsible for the performance. This experiment was highly successful and drew large audiences. A further innovation this winter was the holding of an Inter-Varsity Festival. This took place at McMaster and there were entries from Queen's, Western, McMaster, Ontario Agricultural College and Toronto. The award went to Toronto. The Faculty of Applied Science and Engineering and the Faculty of Dentistry also made use of the theatre as did the Shakespeare

Society, the University College French Club and the Dramatic Society of the University College Alumnae Association. In fact there has never been a time when the work of the University dramatic societies has been more active or more successful than in the past year. Mr. Willard Thomson and his staff have as usual given the fullest co-operation throughout the season.

VISITORS

Among those who visited Hart House during the past year were Sir James Ross (Air Ministry, London), Dr. Grenfell Price (Adelaide), G. R. Treviranus (formerly in Dr. Bruening's cabinet), H. S. Hardit Singh Malik (India), John Rothenstein (Tate Gallery), Wyndham Lewis, the Rt. Hon. A. Duff Cooper and Lady Diana Cooper, Captain T. R. C. Goff (Ottawa), Sir Robert Brooke-Popham, Admiral Sir Howard Kelly, Otto von Habsburg, Archduke Felix of Austria, General Jozef Haler, the Hon. John J. Hearne (High Commissioner for Eire in Canada), Dr. Edwin W. Smith, Dr. B. D. Schonegevel (South Africa), Professor K. Pakstas (Vilna) and Jan Kiepura (Poland).

STAFF AND COMMITTEES

In the administrative staff there have been no changes but Hart House said good-bye on 30th June to one of its oldest employees, who had become a well-tried friend. William Camm (or the Sergeant-Major as he has been known to hundreds of graduates and undergraduates) reached the age of retirement on that date. No one has better understood than he the ideals of the House as set out by its founders and no one has given a finer demonstration of those ideals by his character and ceaseless devotion to duty. Hart House is indeed fortunate to have had such a member of the staff during the first 21 years of its life. Jack Warwick has also left this spring, having been obliged to retire owing to ill health. Since the earliest days of the House he has been one of the two hall porters and has won the esteem and affection of countless members who have appreciated his cheerful service. The Sergeant-Major's position, which is one of great responsibility, has been filled by Mr. L. G. Jenkins, who has been on the staff for the past 16 years. Professor W. J. T. Wright retires this year from the House Committee on which he has served for 6 years. It would be impossible to exaggerate the contribution he has made to Hart House by his wise judgement and devotion to the interests of undergraduates. Professor M. D. C. Tait gives up the Chairmanship of the Music Committee, where his knowledge of music and sound advice have been invaluable. To the senior members who devote so much of their time to the Board of Stewards, the Finance Committee and all Standing and Special Committees, Hart House is under a deep debt of gratitude. Without the ability and experience they so willingly bring to their respective committees the House would find it infinitely more difficult to maintain its varied life.

(22) REPORT OF THE DIRECTOR OF THE CONNAUGHT LABORATORIES

(R. D. Defries, M.D., D.P.H., Acting Director)

It is with an ever deepening sense of loss that I record the passing, on June 20, of Dr. J. G. FitzGerald, the founder in 1913-14 and the director since that time of the section of the University which is known as the Connaught Laboratories. Although he had suffered a serious illness necessitating a prolonged period of treatment and rest, a marked improvement in his health, permitting his return home in April, gave every hope that he would be able in the near future to resume his duties as director of these Laboratories and of the School of Hygiene. These hopes, however, were not to be fulfilled.

Dr. FitzGerald's life was one of great activity, crowded with accomplishments. Within the space of three decades, he created and developed an institute which now inherits a most enviable record of his great achievements in his capacity as director of the Connaught Laboratories; he planned and organised a School of Hygiene which has attained a pre-eminent position under his direction; and he became recognised internationally as an outstanding authority in public health. Keenly interested in the problems and work of the official and voluntary health agencies in Canada, he gave generously of his time as a member of many national committees. From 1930-1936, he served as a member of the Health Committee of the League of Nations, being a vice-president in 1933. He was a member of the Permanent Commission on Biological Standardisation of the Health Organisation of the League. As early as 1923, he became associated with the work of The Rockefeller Foundation, being appointed as a member of the International Health Board, and when this Board had been succeeded by the International Health Division of the Foundation, he served as a member of the Board of Scientific Directors of this Division for two terms of three years. He took an active part in the councils of numerous organisations interested in medical research, including the Banting Research Foundation, the Associate Committee on Medical Research of the National Research Council, the Council's Associate Committee on Tuberculosis Research, the Insulin Committee of the University of Toronto, and the Advisory and Research Committees of the Canadian National Committee for Mental Hygiene. Yet withal, his life was not hurried. His time was always at the disposal of his colleagues, students, and friends. He always had time available because planning was characteristic of his life. The story of the development of the Connaught Laboratories is the unfolding of a carefully considered plan which he brought to the University in 1913 when he was appointed associate professor of hygiene in the Faculty of Medicine. This plan related not only to conduct of research and the rendering of a vital public service, but also to the more effective teaching of preventive medicine, including the providing of facilities for graduate instruction. What he had in mind was service not simply to this University but throughout the length and breadth of Canada and beyond. He was gifted with clarity of vision which permitted him to see issues in their proper perspective. His zeal was unflagging and his accomplishments reflected his genius for organisation and attention to detail. It is gratifying that he had the satisfaction of seeing accomplished in a large way the things for which he had hoped and planned. It was only to be expected that he would gather around him a group of colleagues and workers and that they would catch something of his enthusiasm and share, in part at least, the vision that was his. To each of them has come a deep sense of personal loss. He was not only their "chief" but one who was anxious to know and to share their problems. His spirit and ideals, as embodied in the Connaught Laboratories, will animate those to whom the privilege is given of carrying forward the work which he initiated.

The staff of the Laboratories now numbers approximately two hundred and seventy-five, apart from those who are on leave of absence due to the war. These include three of our most senior members: Dr. N. E. McKinnon who is overseas in charge of the Laboratories of No. 15 General Hospital, R.C.A.M.C.; Dr. M. H. Brown who went overseas in charge of No. 2 Field Hygiene Section, C.A.S.F.; and Dr. D. L. MacLean, Senior Medical Officer (Hygiene) in M.D. No. 2. The absence of these members has been keenly felt. To make anything approaching complete replacement for the loss of their services is, of course, impossible, but everything that can be done to carry on their work is cheerfully being shared by their colleagues here.

In continuing to fulfil the prime purpose of the Connaught Laboratories, viz. research in the field of preventive medicine and related subjects, investigations along usual lines have been carried forward in all sections of the Laboratories, but the outstanding feature of our research program is that stress has

been laid on researches which might yield results of particular value in helping to win the war. Reference will be made to these in outlining the various activities of the Laboratories during the past year.

Bacteriology and Immunology

Solution of problems arising out of large-scale production and supply of tetanus toxoid for active immunisation (vaccination) against tetanus (lock-jaw) together with studies directed toward the production of toxoids and serums for use in the prevention and treatment of gas gangrene have been conducted under the direction of Dr. Donald Fraser by Dr. Helen Plummer and Mr. M. D. Orr. In this connection, Dr. P. J. Moloney has carried forward special studies related to the purification of tetanus toxin. The importance of typhoid-paratyphoid vaccine for use in the army in the prevention of enteric fevers has called for intensive study and important contributions have been made by Dr. James Craigie, Dr. Mary Cowan Maitland, and Mr. J. W. Fisher. Dr. Ronald Hare has conducted an investigation of ways in which war-wounds become infected and of means to avoid such infection. Progress so far made would indicate that the infecting organisms are not present in the wound at the time of infliction but probably find their way from exogenous sources of which the most important are the nose and throat of human carriers and infected cases in the same ward. Although these research undertakings having a definite relationship to the war play a prominent part, a number of important investigations have been conducted by members of the staff in other fields. Dr. Frieda Fraser in continuing her studies of haemolytic streptococcus has conducted observations at the Riverdale Isolation Hospital through the co-operation of Dr. Beverley Hannah, medical director. Dr. Hare has carried forward his studies on the virus of influenza and Dr. Nelles Silverthorne has made further clinical and laboratory studies of meningococcus meningitis and influenzal meningitis. Under Dr. Silverthorne's direction, important studies of whooping cough have also been made. Large quantities of vaccine for the prevention of whooping cough have been prepared and improved methods of testing such vaccine have been developed. An immune rabbit serum has been produced and observations are being made as to its possible value in the prevention of this disease. With Dr. Silverthorne, Mr. R. J. Wilson has successfully prepared vaccine from *H. pertussis* cultured in Hornibrook's medium. Mr. Wilson also has continued his studies of staphylococci. Dr. L. Farrell has recorded the results of studies of staphylococci in several scientific papers presented during the year. Dr. Donald Fraser has carried forward with Dr. E. L. Davey laboratory and field investigations of diphtheria. Various preparations of diphtheria toxoid have been investigated, observations being made in groups of children through the co-operation of the medical officers of health of several Ontario municipalities. A diphtheria carrier survey in school children in Toronto has been continued and it is of particular interest that no carriers have been found on the examination of more than 15,000 since the survey was commenced in December 1937.

Chemistry in Relation to Hygiene

Under the direction of Dr. P. J. Moloney, studies of diphtheria toxoid and Schick-test toxin have been continued and important advances made. As a result a new preparation of diphtheria toxoid has been made by Dr. Moloney and Mr. M. D. Orr which may lead to a distinct improvement over the product at present used. The new Schick toxin which was made available by Dr. Edith Taylor last year has been extensively used and has proved to be very satisfactory. Dr. Taylor has now explored the use of synthetic media in preparation of diphtheria and tetanus toxins with encouraging results. Under Mr. Orr's immediate direction, large quantities of tetanus toxoid have been prepared for use in the Canadian armed forces.

Viruses

Studies of fundamental importance are being conducted. It has become more evident that a fuller understanding of the phenomenon of virus variation is required in the field of prophylactic inoculation against various virus infections. Such studies are in progress and have already yielded important results. Study of the complement-fixation test with rabies virus in relation to problems of developing an application of this test to viruses generally has been continued. The development of such a test would be of great value in the investigation of poliomyelitis and other virus diseases. In studies of poliomyelitis virus, confirmatory evidence was obtained as to the presence of the virus in the stools of cases and contacts. During an outbreak in Ontario last summer, virus was demonstrated in two stool specimens, one being obtained from an abortive case one month after the illness. Of particular interest is the fact that the virus was recovered after six months' storage of the specimen in a refrigerator. Dr. N. A. Labzoffsky, under the direction of Dr. Craigie, has been engaged in the study of equine encephalomyelitis virus with particular reference to immunity and vaccination against this virus. Further study of the interrelationship of *B. typhosus* and phage has continued to yield observations of general interest in the virus field, especially in connection with the phenomenon of acquired cellular resistance and interference effects between virus variants.

Chemotherapeutic Studies

Enlargement of the work in the field of chemotherapy was undertaken during this year through the appointment of Dr. R. J. Schnitzer. With Dr. H. Barrett and Dr. S. Raska, about sixty new chemotherapeutic substances have been prepared and investigated as to their action. Biological work in connection with these investigations has been done in co-operation with Dr. Farrell, Dr. Plummer, and Dr. K. S. Sternbach. Interesting work on the treatment of pin-worm infestation has been done in co-operation with Dr. E. Kuitunen.

Physiological and Biochemical Studies

One of the most significant changes in the activities of the department of physiological hygiene and the related section of the Connaught Laboratories has been the almost complete cessation of work on certain aspects of fat metabolism which had previously occupied a large part of the attention of Dr. C. H. Best as head of this department, Dr. Jessie Ridout and their assistants. With a great deal of help from Dr. William Thalhimer and Mrs. Myron of the Manhattan Convalescent Serum Laboratory, New York, a project was initiated for the preparation of concentrated human serum for use in prevention of shock in the wounded. Some five hundred donors were enlisted from the student body and subsequently, through the efforts of the Toronto Branch of the Red Cross Society, a much larger number from the general public. Drs. A. L. Chute, and J. W. Magladery of the department of physiology have collaborated in this project. The serum has been processed with the help of the staff and the facilities of the Connaught Laboratories, and samples have now been received from some 2,500 donors. The serum has been tested in a few selected cases in Toronto under the auspices of the departments of medicine and paediatrics. Trial lots have been sent to a British military hospital and to the Head of the Serum Production Project in England. While the preparation is proceeding at a rather moderate rate, it can be stated that the organisation is complete and that it can readily be enlarged in Toronto or duplicated in other centres. A part of the financial support of the project has come from the National Research Council and more recently from the Canadian Red Cross Society. The serum will be distributed through the Department of National Defence and the volume produced will be increased or decreased as the medical authorities in this Department advise.

Dr. D. Y. Solandt, collaborating with the head of the department, has investigated the phenomena of traumatic shock with and without haemorrhage and of histamine shock. They have also studied the relation of dietary choline to the production of the neurohumour acetylcholine. The time factors of the various effects of heparin have been measured. Dr. Solandt has also made serial chest-lead electrocardiograms on dogs and the findings have been used to clarify the modern theory of the genesis of the electrocardiogram. The study of the functional changes in denervated skeletal muscle has been facilitated by a grant of $2,600 from the National Foundation for Infantile Paralysis of New York and work in this field is being carried on by Dr. J. W. Magladery. Mr. C. R. Cowan has collaborated in the design and testing of an improved exchange transfusion pump which has been built under his supervision. Mr. Cowan and Mr. K. Roseblad have built special blood-flow cells designed to compare the tendencies of platelets to agglutinate on various surfaces. Mr. Roseblad has investigated the influence of harmonics on the coagulating properties of the high-frequency currents used in surgical procedures and has built equipment for producing a variety of such current-forms.

During the past year, research work on the preparation and the chemical nature of Insulin has continued. Arising out of work initiated by Dr. D. A. Scott, the process of purification of Insulin has been modified by Dr. A. M. Fisher and Mr. R. G. Romans in such a manner that it is now economically possible for the Laboratories to produce a crystalline, instead of a non-crystalline, Insulin preparation for regular use in the treatment of diabetes. Consequently, Insulin supplied by these Laboratories is now made from zinc-Insulin crystals. Under the direction of Dr. Scott, Mr. N. K. Iyengar, a Vincent Massey Fellow from India, has worked on the proteolytic enzymes in blood and tested their activity on Insulin. Zinc-Insulin crystals have been isolated by Dr. Scott and Dr. Fisher from human and from buffalo pancreases.

Dr. E. W. McHenry and Dr. E. G. Gavin have continued the study of the effects of various dietary factors upon fat synthesis and metabolism. They have shown that the feeding of a special fraction from beef liver causes marked synthesis of fat and of cholesterol in rats and the production of fatty livers which do not respond to the lipotropic action of choline. Lipocaic, yeast, or rice-polish concentrate will prevent this type of fatty liver. Arising from this work a rapid method for the assay of lipocaic has become available. Dr. D. G. H. MacDonald and Dr. McHenry have extended their investigation on bradycardia in rats and have shown that the feeding of fat delays the onset of the bradycardia caused by vitamin B_1 deficiency and that the bradycardia can be relieved by the administration of fat. Miss Helen Perry and Dr. McHenry have been concerned with the possible effect of vitamin P upon capillary fragility. Sincere thanks are extended to The Banting Research Foundation for financial assistance to Dr. MacDonald and to Miss Perry.

As a result of a grant from the Canadian Council on Nutrition, Dr. McHenry has directed a study of food consumption of eighty families having yearly incomes between $1,500 and $2,400. Miss Flora Webster was responsible for collecting the data. The necessary calculations were made by Miss Jean Patterson and Miss Lillian Barber. A preliminary analysis of the data indicates that the families were securing fairly adequate diets. Miss Patterson has also carried out analyses of a number of Canadian foods. Miss Patterson and Dr. McHenry have begun an investigation of the effects of vitamin A upon metabolism. Preliminary results show that this vitamin has a specific effect upon metabolism as shown by changes in body weight of rats. The Natural Science Division of The Rockefeller Foundation has made a substantial grant to provide assistance for Dr. McHenry in continuing his investigations of the physiological action of the vitamins.

Mr. H. L. Bett and Dr. McHenry have studied procedures for the purification of the anti-anaemic substance in liver. Grateful appreciation is expressed

to the Medical Service of the Toronto General and Western Hospitals for co-operation in testing various extracts.

Dr. G. A. McVicar and Dr. McHenry have made a number of preparations of histaminase. Some of these have been used in collaboration with Dr. Best and Dr. E. T. Waters in a study of the effect of histaminase upon anaphylactic and histamine shock. It has been found that the enzyme can be secured in a form which has an immediate effect *in vitro*.

Consequent upon the outbreak of war, much of the activity of the section of industrial hygiene has had to do with studies on phosgene poisoning. These investigations were greatly facilitated by the equipment which had been installed previously for studying the effects of exposure to industrial solvents. These investigations have been carried out by Dr. Hugh Barrett in collaboration with Dr. Best and Mr. Cowan.

Mr. Irvine Goddard has been engaged in further studies on the fate in the organism of various chlorinated compounds.

Farm Section

The coming of the war found the farm section of the Laboratories in a favourable position. Under the able direction of Dr. N. E. McKinnon, plans which had already been made for use in case of need were put into effect and production and research work were directed toward meeting the possible requirements of the war.

The resignation of Dr. G. D. W. Cameron in September to accept the important position of chief of the laboratory of hygiene, Department of Pensions and National Health, Ottawa, constituted a great loss to the Laboratories. During his eight years of service, he had made a number of important contributions in the field of bacteriology and immunology and had taken a large part in the responsibility for preparation of products.

In making the necessary re-adjustment, Dr. Cameron's responsibilities have been shared by Dr. C. Siebenmann and Dr. J. M. Corkill. Dr. Siebenmann, in addition to preparing large quantities of diphtheria toxoid, continued his investigations in regard to the factors relating to toxin and toxoid production and also in regard to the preparation of anti-meningococcus serum. Dr. Corkill, in addition to his extensive duties relating to the preparation of various antigens, also assumed part of Dr. Cameron's responsibilities, being forced to lay aside, in turn, certain studies which he was conducting.

With the increase in the number of horses under immunisation, there has been a very substantial increase in the responsibilities of Dr. E. G. Kerslake under whose direction their immunisation and bleeding is conducted. During the year, Dr. Kerslake successfully completed several researches relating to the health of the animals under his care.

Dr. R. C. French has most successfully carried forward the concentration of antitoxins using a new digestion process. Arrangements for the use of this method were completed during the year so that in the near future all antitoxins distributed by the Connaught Laboratories will be made by this process which it is believed is a definite advance on the methods previously used. The method was the subject of intensive research by Dr. French before it was used as routine and during this year a number of valuable scientific contributions have been made by him.

The preparation of heparin has been continued and during the fall months the demand for this product was such that the facilities had to be greatly enlarged. Work at night was required and the greatest credit is due to Dr. Arthur Charles and his associate, Mr. L. B. Jaques, for meeting this urgent demand. Dr. Charles and Mr. Jaques are contributing to the knowledge of heparin through their research studies and in addition Mr. Jaques has investigated vitamin K.

Reference has already been made to the enlistment of Dr. McKinnon for overseas service. His departure from Toronto occurred in January. Mr. M. D.

Orr, possessing a very intimate knowledge of the work of the farm section, willingly agreed to assume charge of it in Dr. McKinnon's absence. This he has done most acceptably at considerable personal inconvenience. His assuming of responsibility for the farm section has required him to discontinue temporarily his research undertakings with Dr. Moloney.

Library

A further increase in the use of the library of the Connaught Laboratories is reported by Miss Olga E. Somerville, librarian. The attendance of 6,837 constituted a record, with loans from the library totalling 3,108. Miss K. Pichler has continued her valuable services in making a bi-weekly list of current literature and in preparing translations. Volume XI of the Collected Studies of the Connaught Laboratories was published in March and contained reprints of thirty-seven articles which had been published in scientific journals during 1938.

Western Division

During the period covered by this report, the Western Division of the Connaught Laboratories began its fifth year of operation in quarters within the department of bacteriology and preventive medicine at the University of British Columbia. Since its establishment in October 1935, the activities of the Western Division have become very closely integrated with those of the Department, so that while preserving their identities, and pursuing complementary functions, the two organisations have become interdependent to an unusual degree.

During the year, as in previous years, the staff numbered five. Dr. C. E. Dolman remained in charge of the Western Division, as a research member of the Connaught Laboratories. Dr. L. E. Ranta joined the staff as research assistant in July 1939, and was simultaneously appointed assistant professor of bacteriology and preventive medicine at the University of British Columbia. Dr. Ranta's appointment to these two positions has proved a source of new strength to both organisations concerned. There were also three laboratory assistants.

Dr. Ranta has, throughout the year, investigated the cultural and toxigenic properties of strains of haemolytic streptococci isolated from cases of scarlet fever, and other acute streptococcal infections, hospitalised in Vancouver. Dr. Dolman has continued researches into the staphylococcal toxins, particular attention having been paid to methods of separation of the enterotoxin, or food-poisoning substance, from the so-called alpha- and beta-toxins. The reaction-producing effects of beta-toxin, when injected into human, rabbit, or guinea-pig skin, and the reduction of these effects by formalinisation, and by simple storage, at different temperatures, have also been investigated. In many of the above investigations, the assistance given by Mr. Marvin Darrach has been most valuable. He has worked for the past year under a grant from the Associate Committee on Medical Research of the National Research Council of Canada. His findings will form the basis for a thesis which he will present as part credit towards the Ph.D. degree in the University of Toronto. It is a matter of great satisfaction to the University of British Columbia as a whole that the presence of the Western Division on this campus should have led to the granting of academic credit towards a Ph.D. degree by the School of Graduate Studies at Toronto, for work done under Western Division auspices. This is the first example of such recognition.

The Western Division is contributing largely towards the efforts being made in western Canada to ensure a reserve of personnel, trained in bacteriological techniques, against the possibility of epidemics. It is making this possible through co-operation with the department of bacteriology and preventive medicine and several graduate students have carried on interesting researches in the bacteriological field during the summer months.

Close relations have been maintained with the Division of Laboratories of the Provincial Board of Health and the Provincial Health Officer has approved

of an arrangement whereby in the case of epidemics occurring in the province, whose investigation might be of interest or benefit to the Connaught Laboratories, Dr. Dolman or Dr. Ranta might feel at liberty to carry out the necessary investigations. As in former years, very happy relationships have been maintained with the Vancouver General Hospital and St. Paul's Hospital whose doors are always open to the members of the Western Division and whose staff feels free at all times to ask us for advice. The very serious lack of space and facilities for the Western Division and for the department of bacteriology and preventive medicine in the University of British Columbia has been referred to in previous reports. To meet this urgent situation and to provide adequate accommodation for the rapidly expanding laboratory work of the Provincial Board of Health, plans were developed three years ago for the construction at the University of British Columbia of an institute of preventive medicine. After protracted negotiations, arrangements were finally concluded last year for the construction of the institute. The Provincial Legislature voted $350,000 for the building and plans for the building were completed by the provincial architect. The outbreak of war led, however, to the postponement of the project. Such a situation renders the conduct of work most difficult and it is earnestly hoped that the building may be proceeded with at the earliest date possible.

Distribution of Products

Though changes in the list (now numbering 35) of products distributed by the Laboratories consisted of only a single minor addition during this year, the total volume of products which we were called upon to supply was distinctly greater than that of any preceding year. Contributing to this increase was the demand for typhoid-paratyphoid vaccine, vaccine virus and tetanus toxoid required for immunising members of the Canadian armed forces against enteric fevers, smallpox and tetanus. Not only to meet heavy demands for these and other products, but also to build up reserves for which there might be emergent need, the volume of production achieved during the year was on unusually high levels. Also deserving of mention in the matter of production is another achievement of the year, viz. the concluding of arrangements and the evolving of means whereby it will soon be possible that all antitoxins supplied by the Laboratories will have been prepared by improved processes yielding particularly highly concentrated and refined antitoxins having the advantage that serum reactions to these antitoxins among those receiving them are very considerably reduced in number and severity.

The distribution of products has not only been from coast to coast of the Dominion but there has been, as usual, a considerable export to several British and foreign countries. The production and distribution of products constitute a record in the history of the Laboratories and during this year also the largest number of research undertakings have been conducted.

The greatly increased work of the Laboratories has, of necessity, placed upon Mr. F. Lorne Hutchison, Comptroller, an even greater burden of work than formerly, which he has undertaken without reserve and conducted with his characteristic devotion. In carrying forward this work, he has had the able assistance of Mr. K. E. Allen, assistant comptroller and accountant, and Mr. I. W. Boyd, assistant comptroller.

As in former years, many guests have been received by the Laboratories from numerous parts of Canada, the United States of America, and the British Isles, and from other countries.

To the members of the Connaught Laboratories Committee, to his colleagues, and to all the other members of the staff the acting director desires to express thanks for their hearty support and co-operation at all times.

(23) STATEMENT REGARDING THE MUSEUM OF ARCHAEOLOGY

(Professor C. T. Currelly)

The tremendously outstanding addition to Ontario's archaeological collections during the year 1939-40 is the collection of Canadiana presented by Dr. Sigmund Samuel. As the war began just when plans were completed for the construction of a gallery to house the collection, the Government was forced to cancel the appropriation it had made, and Dr. Samuel very generously carried the entire cost of a handsome gallery, which was officially opened by His Honour the Lieutenant Governor in March. In this important collection of original prints bearing upon Canada's history from the period of the Seven Years' War onwards, Dr. Samuel places at the service of the public the result of many years of an absorbing interest, accompanied by a heavy expenditure of time and money. The opportunity to observe the contemporary portrayal of life in Canada and the physical setting of historical events, provides a source of pleasure for the general public and a very important supply of factual material for the student and the historian.

Next in importance to the Canadiana Collection was the accession of thirty-one pieces of Indian sculpture in clay, plaster, stone and bronze. Fifteen of the pieces are Gandharan, second and third centuries; nine are Graeco-Buddhist, fifth century; one piece is Gupta; and the remainder range in date up to the fourteenth century. Twenty-one of the pieces were acquired through the generosity of the Reuben Wells Leonard Bequest. A noble Buddhistic head of plasterwork of the fifth century was presented in honour of Mary Treble Currelly.

As the Government's grant for purchase of exhibits was cut off as soon as the war began, the majority of the year's accessions came as gifts, ninety-six donors presenting a wide variety of objects. The classical department received an Athenian juryman's name-plate, thirty coins, and from Mr. and Mrs. C. R. Wason a series of small vases, seals and other small objects of particular interest. Miss Sylvia Hahn of the Museum staff painted for the Minoan gallery a large restoration of the Queen's apartment in the Palace of Minos at Knossos, Crete, 2000-1400 B.C. This adds greatly to the teaching possibilities for this important period; our Cretan collection must necessarily remain small and must be supplemented by illustrations.

One of the few small articles received in the arms and armour department was a Turkish flight arrow given by Mr. Forrest Nagler. This fills a gap in our illustration of the fascinating problem of the arrow.

In the metalwork section, the chief gifts were a pair of French bronze candelabra of the early nineteenth century, from Lady Crispin; a fine silver mug made in London in 1782, and an Edinburgh silver tablespoon of 1804, from Mrs. S. L. M. Pipher; twenty pieces of pewter, mostly nineteenth century, from Mrs. M. Wilson; and a pair of silver candleholders, clever filagree work of the Dutch East Indies, from Miss E. J. Reynolds. A collection of a hundred and fifty copper coins and tokens, mostly English, was presented by the Royal Canadian Institute.

We acquired a few pieces of late eighteenth and early nineteenth century porcelain from English factories, such as Liverpool, Castleford, Spode and Wedgwood. In Mrs. M. Wilson's gift of twenty-eight pieces of English ceramics were numerous plates of the nineteenth century "cottage wares". We are prepared to make a quite large collection of these wares, as they were exported to Canada or brought by early settlers in very considerable quantities, and many people are interested in their designs.

The textile department received ten old Javanese batiks and three fine examples of modern Indian weaving and embroidery. Approximately one hundred and fifty pieces of costume and accessories were presented by twenty donors, outstanding amongst whom for the size of their gifts were Miss H. M.

Armour, Mrs. S. L. M. Pipher, and Miss N. K. G. Spiers. It is a source of satisfaction in this department that the year's gifts did much to fill gaps in the exhibition of nineteenth century costume.

The most important addition to the collection of printing was a set of prints made in 1859 from the sixteen intaglios on copper that form part of the great votive chandelier given by the Emperor Frederick Barbarossa to the Cathedral of Aix-la-Chapelle in 1165. This rare and valuable set of prints was presented by Dr. H. M. Tovell. The Sisters of St. John the Divine gave thirty-six engravings of the second half of the eighteenth century, interesting from the point of view of subject, the famous classical and renaissance architectural monuments of Italy.

A few pieces were added to the Persian collections: four Luristan bronzes, and as a gift from Mr. G. D. Hornblower a sixteenth century porcelain bowl in the Chinese style and a very fine copper cooking bowl of the same period.

Important objects were obtained for the East Asiatic department. Through the Reuben Wells Leonard Bequest we secured a magnificent Japanese lacquer statue of Buddha, dating between 898 and 1185. The Members presented a suit of Japanese armour, and six pieces of eighteenth century Japanese pottery were also added. Among the accessions of Shang and Chou date in the Chinese section were small series of inscribed carved bones, inlaid bronzes, and hard white pottery. Messrs. Yamanaka & Co. of New York presented a Ch'ien Lung porcelain bottle; and Mrs. A. Leslie gave forty-three porcelains, among them a piece of extreme rarity, possibly unique. A fine T'ing Yao cup-stand was also received. To Mrs. H. D. Warren we owe a satin cushion cover from a throne chair, old and exquisitely embroidered. An interesting collection of bronze and brass bequeathed by the late Mr. W. H. Cawthra is chiefly oriental.

The department of ethnology as usual received a large number of gifts, of which only the most important can be mentioned. The National Museum presented a collection of typical Canadian Indian material excavated by Mr. W. J. Wintemberg. An Ontario Indian collection gathered by William Axon and his family was given by Miss M. E. Axon and Mr. D. H. Axon. Mr. F. A. MacDougall, Superintendent of Algonquin Provincial Park, sent seven stone implements found in his district. A collection of over fifty native objects from the Hay River district was given by Canon A. J. Vale. A Chilkat blanket was presented by Mr. J. A. Skinner in memory of Mrs. R. B. Skinner. Two Northwest Coast skirts were given by Mrs. H. D. Warren. Mr. J. W. McKee presented an Eskimo kayack and umiak. Mr. L. A. Learmonth added over a hundred pieces to the Eskimo collection that he has been steadily developing for several years. An important acquisition was a hundred and fifty pieces of old ivory and bone from the Aleutian Islands. A very important addition to the African galleries was the Victor A. E. Goad Collection of material from the Belgian Congo.

In the summer of 1939, the second season's work was completed on the farm of Mr. John Pound near Aylmer, and a further quantity of material of Neutral Indian culture was collected. A careful survey was also made of Algonquin Park.

The loss of three members of the staff when the war necessitated a cut in income, has naturally retarded some of the work, particularly the making of labels. The purchase of books had to be cut off, but we have been fortunate in having approximately a hundred books presented during the year. Of tremendous importance among them is ORIENTAL CERAMIC ART, an eleven volume publication of the W. T. Walters Collection of Chinese porcelains, with text by S. W. Bushell and superb lithographs by Louis Prang. This, together with a beautifully produced publication of the Henry Walters Collection of incunabula, was most generously presented by the Walters Art Gallery of Baltimore.

Museum Studies No. 2, AN ALBUM OF CHINESE BAMBOOS, was published during the year. This is Dr. W. C. White's second distinguished publication under the Rockefeller Foundation's grant.

(24) STATEMENT REGARDING THE ROYAL ONTARIO MUSEUM OF ZOOLOGY

(*Professor J. R. Dymond*)

The most striking feature of the work of the Museum of Zoology during the period covered by this report is the rapid increase in the number of requests for advice and assistance. There is a steady growth in the number of individuals who consult the Museum by letter, by telephone, or by personal call for natural history information, for the identification of specimens and for many other forms of assistance. In addition, scientists are looking to us more and more for information of a kind recognised as the special field of museums.

In the acquisition of new knowledge about animals, specimens are an absolute essential. The acquisition and preservation of specimens is a fundamental function of a museum. These specimens are not only for study by its own staff but for loan to other institutions. A great deal is being learned about our animal life through the loan of specimens to other research organisations. During the year the number of specimens of the more important groups added to the study collections was as follows: Mammals, 1205, Birds, 1975, Reptiles 86, Amphibians, 177, Fish 619 lots, Insects, 5454, Molluscs, 4199 lots. Accessions to the library totalled 461 books and 4156 unbound publications.

Some of the more important donations received during the year were as follows:

The late Fred Barratt—267 specimens of insects.

O. D. Boggs, Cobourg, Ontario—26 birds, 2 nests and 14 eggs from Ecuador and Peru.

D. B. Deeks, Toronto—76 birds collected at Attawapiskat Post on James Bay.

Mrs. Victor A. E. Goad, Toronto—224 books and 130 unbound publications, constituting the angling library of the late V. A. E. Goad.

Paul Hahn, Toronto—Skin of Passenger Pigeon, the 55th received from this donor and our 83rd specimen of this extinct bird.

Rev. H. B. Herrington, Thomasburg, Ontario—56 lots of Ontario shells.

K. H. Lang, Aklavik, Northwest Territories—79 fish from Aklavik area of Northwest Territories.

A. La Rocque, Ottawa, Ontario—425 insect specimens.

L. A. Learmonth, Fort Ross, Somerset Island, N.W.T.—20 birds from that area.

G. Hubert Richardson, Toronto—255 skins of birds, 8 volumes Morris's British Birds and 1 volume of R. Shaw's General Natural History.

J. T. Sherbarth, Toronto—28 volumes Ninth Edition of Encyclopedia Britannica.

The mollusc collection and library relating to this subject belonging to the late Chief Justice F. R. Latchford were purchased at a nominal price. Judge Latchford was an outstanding student of Canadian molluscs and had accumulated a large and valuable collection from various parts of Canada. It was especially rich in material from Ontario.

During the summer of 1939 the Museum carried out field studies in the vicinity of Lake Attawapiskat, Patricia District, in the area between Cochrane and Moosonee, in Eastern Ontario, on Manitoulin island and in the Canadian Arctic.

Probably no area of a comparable size in North America is less known, so

far as natural history is concerned, than Patricia District, in spite of the fact that this area was one of the first parts of Ontario whose natural history received attention. Our expeditions to this area yielded information of the greatest value as well as considerable collections of mammals, birds, fish, insects and other groups.

Mr. J. G. Oughton accompanied the Eastern Arctic Patrol of 1939 in the steamer "Nascopie". Much Arctic material was added to our collection as a result of Mr. Oughton's collecting.

Mounted animals placed in the gallery include black fox, silver fox, bay lynx and pug dog. An important addition to the exhibits is a model of a house fly, fifty times as large as the actual animal. Such enlarged models are of great educational value since they show features such as the hairy legs and expanded tongue which offer such perfect devices for carrying disease organisms from the filth on which flies alight, to human food and utensils. An exhibit illustrating the manufacture of hudson seal from muskrat pelts was installed.

Research in progress in the various divisions include:

Bird Division: Racial studies are being carried on in this division on several species of birds, notably on downy and hairy woodpeckers. Distributional and economic studies are also proceeding. Assistance and supervision is being given to a number of amateur naturalists in their studies of the cliff swallow, cardinal, pileated woodpecker, robin migration and historical records of Ontario birds.

Mammal Division: Racial problems comparable to those being studied in the bird division are being attacked in the mammal division on a number of species of Ontario mammals. The effect of preparation methods on mammal coloration is being studied in connection with those racial studies. Mr. Cross is cooperating with the Hudson's Bay Company in a study of changes in the numbers of Ontario fur-bearers. Our annual questionnaire returns are a part of this study. Trapping technique as a contribution to population studies are also being investigated in connection with summer field work.

Reptile and Amphibian Division: The results of a great deal of investigation on our reptiles and amphibians are included in the Museum's Handbooks 3 and 4.

Fish Division: It is essentially true to say that the Royal Ontario Museum of Zoology contains the only research collection of fish in Canada.

Studies in progress in this division include: Distribution and taxonomy of Salmonoid and Coregonine fishes in Canada, the fishes of the Canadian Arctic and the fishes of Eastern Ontario.

Insect Division: The field of entomology is so immense and our facilities so meagre that it is necessary to specialise if we are to make any significant contribution in the study of insects. Mr. Urquhart is making a special study of grasshoppers.

Mollusc Division: Mr. Oughton has made a study of the Arctic molluscs collected last summer when he visited Canada's eastern Arctic. Ontario's mollusc fauna is receiving special study. As in most other divisions the co-operation of amateur naturalists has been enlisted in the study of particular problems.

Loans of research material have been made to the following institutions:
National Museum of Canada, Ottawa
Carnegie Museum, Pittsburgh, Pennsylvania
University of Michigan, Ann Arbor, Michigan
United States Bureau of Biological Survey, Washington, D.C.
Cornell University, Ithaca, New York
University of California, Berkeley, California
Musée Royal D'Histoire Naturelle de Belgique, Bruxelles.
British Museum (Natural History), London, England
Bureau of Entomology, Department of Agriculture, Washington, D.C.
Department of Zoology and Entomology, University of North Carolina

(25) STATEMENT REGARDING THE ROYAL ONTARIO MUSEUM OF GEOLOGY

(Professor E. S. Moore)

The Director spent part of the summer in the Western States and established contact with a number of persons from whom it was hoped desirable specimens might be obtained. Some hundreds of feet of coloured motion picture film of unusual geological features were taken for museum lectures. Unfortunately, the curtailment of expenditures, because of the war, has prevented the purchase of specimens and made it necessary to discontinue our lectures on scientific subjects. Our preparator, Mr. Albert Crook, resigned his position early in the year to enter war service.

The automatic balopticon, secured last year, has been equipped with slides depicting geological features and is proving an important adjunct in interpreting geology to visitors to the galleries, especially school children. Collections of specimens, as an aid to teaching, have been supplied to schools that have requested them.

A history of the Museum of Geology has been prepared by the Director and published. It covers the activities of the museum during the first 25 years of its existence and it appeared as No. 1—Contributions of the Royal Ontario Museum of Geology.

A special case is being prepared with an exhibit of articles illustrating the diverse activities of the late Professor Coleman, first director of the museum and distinguished as scientist, Canadian explorer, scholar, author, and artist.

The Director appreciates, especially at this time when funds are not available for purchases of specimens, the generosity of friends who donate specimens. The following have been added to the collection during the year.

Donations:

Unusually rich gold ore from the reef on the Rand, South Africa. Mr. R. W. Brigstock.

Native fold deposited in crest of fold from Bankfield Consolidated Mines Limited, Little Long Lac, Ontario. Col. C. D. H. MacAlpine.

Slab of rock showing peculiar wave markings, from the Dundas formation at Toronto. Dr. V. J. Okulitch.

Lead-silver ore from the St. Eugene mine, and folded lead-zinc ore from the Sullivan mine, British Columbia. Mr. P. A. Chubb.

Cassiterite (Tin stone). Mr. Paul Hahn.

High grade gold telluride ore and an unusual specimen illustrating the relations between native gold and telluride, from the Upper Canada mine, Kirkland Lake area. Mr. R. R. Brown, Upper Canada Mines Limited.

Silicified wood from Arizona. Prof. E. G. R. Ardagh.

A prospector's pick consisting of high grade drill steel and monel metal and of very fine workmanship. Made by Mr. C. P. Hogan, blacksmith at the Kirkland Lake mine and presented to the Museum by him through Dr. J. B. Tyrrell.

Specimens illustrating interesting structural features in ore deposits. From Little Long Lac, Ontario. Mr. J. H. Douglas and Mr. H. M. Howard.

A number of books and other publications from the library of the late Professor Coleman have been added to the Museum library.

Purchases:

Polished section of a native silver-calcite vein showing included fragments of wall rock.

Collected:

Arsenical gold ore from the Ackerman mine, Marmora, and specimens of garnet in paragneiss from Bob Lake, Ontario. By the Director.

(26) STATEMENT REGARDING THE ROYAL ONTARIO MUSEUM OF MINERALOGY

(Professor A. L. Parsons)

In spite of the fact that certain plans for the improvement of our collections were largely nullified by the outbreak of war and necessary retrenchment consequent thereto, the collections have been augmented during the year by exchange, donation, purchase and collection by the staff.

During the past summer the director visited the important museums in Poland, Russia, Finland, Sweden, Norway, Denmark, Germany, Hungary, Belgium, France and England to negotiate exchanges and gather new ideas as to museum display and technique. From the exchange point of view the trip may be, for the time being, considered a failure, for with few exceptions the institutions concerned waited until after the summer holidays to send their material, when war and the apprehension of war made it impossible to devote time to these exchanges when the more important problem of providing safe storage for their entire collection, or at least the most valuable and irreplaceable portion, occupied the attention of the staff, to the exclusion of all other activities. It has also been impossible for this museum to make a proper return for the material received.

On the same trip selections of choice material were made from the stocks of mineral dealers in Germany, France and England. About half of the material thus selected was shipped before the outbreak of war. Certain orders were cancelled.

Important exchanges for the year are as follows:

The American Museum of Natural History—Boothite and Parahilgardite.
Dr. O. H. Erdmannsdorffer, Heidelberg, Germany—Deekeite, and Rhönite.
Dr. S. J. Thugutt, Warsaw, Poland—Chacaltaite and Janite.

All of these are rare minerals and new to this museum.

Prof. P. Quensel, Stockholm, Sweden—A fine suite of minerals from Sweden.
M. Vonsen, Esq., Petaluma, California—Rare minerals from California.
C. S. Bullen, Esq., Ypsilanti, Mich.—Minerals from Ohio and Michigan.
C. H. Klein, Esq., Hudson, N.Y.—Minerals from Franklin Furnace, New Jersey.
F. A. Miles, Esq., Roswell, N.M.—Minerals from New Mexico.
Prof. A. Pelloux, Genoa, Italy—Minerals from Italy.
A continuing exchange with the United States National Museum has contributed a slice of the Santa Luzia de Goyaz Meteorite.

Among the outstanding donations may be mentioned the following:

G. G. Waite, Esq.—Agate.
G. E. Steel, Esq.—Peristerite, sunstone and yellow gem microcline.
H. S. Stewart, Esq.—Meta Cinnabar.
Dr. R. Thomson—Minerals from Texas.
Prof. H. V. Warren—Some British Columbia minerals important in connection with research work.
Henri Tuxen, Esq.—Meta-jarlite, a new mineral.
Prof. P. Ramdohr—Scheelite from the Natas Mine, S.W. Africa.
Dr. J. Satterly—Minerals and rocks from Kenora District, Ontario.
Dr. L. J. Spencer—Lechatelierite from the Libyan Desert.
Professor Kolbeck—Herzenbergite from Bolivia.

D. A. Nichols, Esq.—Minerals from the North West Territories.
Walter Tovell, Esq.—Mineral specimens from various localities.
H. Whittingham, Esq.—Minerals from the Sherritt Gordon Mine, Manitoba.
C. D. Stevenson, Esq.—An unusual specimen showing a pyrite crystal in a drill core from the Pamour Mine, Ontario.
Prof. C. Faessler—Suzorite, a new rock type from Quebec.

Further additions of fine specimens of gem stones have been made from money provided by the bequest of the late Reuben Wells Leonard, Esq. The gem collection is one of the most popular exhibitions in the gallery and its attraction has recently been enhanced by the installation of a suitable light to show the peculiar features of the star rubies, sapphires and catseye which can be seen properly only with a single light source.

Collecting activities were carried on in Eastern Ontario during the past summer under the direction of Dr. Meen, by William Wightman, the summer preparator.

An opportunity was offered to twenty pupils from the collegiate institutes and technical schools of Toronto to come for an hour a week for ten weeks to take work in the sight identification of minerals. This work was in charge of the museum assistant, Mrs. R. B. Burgess. The results were so satisfactory that it is proposed to continue the same plan for another year.

Among the special exhibits, the crystal cave, the case to exhibit the colours of minerals, the fluorescent minerals, the lodestone compass, continue to be of interest to young and old alike. It is expected that in the near future it will be possible to show the interesting effects of polarised light on minerals in a striking manner.

The work of the museum during the year has suffered because of the serious reduction in the appropriation which resulted in the loss of the services of our full-time preparator, James Stewart, who had served for more than ten years in that capacity, and prior to that had been laboratory attendant in the department of mineralogy. It was also necessary to put our museum assistant, Mrs. R. B. Burgess, on part-time employment. With the cancellation of the unexpended portion of the special grant for the purchase of minerals, it became necessary to countermand orders for minerals which had been placed with dealers and collectors. With a reduced staff the routine work of the museum has been most faithfully carried on. In spite of the discouragement that has come from necessary retrenchment and in view of what has happened to his colleagues elsewhere, the director is gratified to know that there is no outwardly visible indication of any deterioration in our collections and display.

(27) STATEMENT REGARDING THE ROYAL ONTARIO MUSEUM OF PALAEONTOLOGY

(Professors M. A. Fritz and L. S. Russell)

Acquisitions:

Acquisitions have not been as numerous this year as in the past since the usual funds have not been available. The scientific material described below, however, has been secured.

By collection

During the months of July and August the division of vertebrate palaeontology conducted an expedition to southwestern Saskatchewan. A large collection of Oligocene mammal remains was obtained from the Cypress hills, and part of the skeleton of the dinosaur *Triceratops* was collected from the Upper Cretaceous rocks of Frenchman river valley. Miscellaneous collections of vertebrates were obtained from other parts of southern Saskatchewan.

A collection of Upper Ordovician scoleodonts from the Credit river at Streetsville was made by members of the staff.

By exchange

The Carnegie Museum of Pittsburgh has shipped to this Museum the skeleton of the giant Jurassic dinosaur *Diplodocus*, in exchange for two dinosaur skeletons from western Canada. Preparation of the *Diplodocus* will take considerable time, but it is expected that the skeleton, when mounted, will be between 60 and 70 feet in length.

A small but valuable collection of Oligocene mammals was obtained from Mr. George Sternberg, of Lawrence, Kansas, in exchange for the head of an Irish deer.

By donation

Very interesting fossil tracks were discovered in the early Tertiary rocks of Alberta by Mr. R. L. Fowler, of Aldersyde, Alberta. The specimen was purchased by the Department of Geology, and presented to the Museum of Palaeontology.

Other presentations include:

A splendid set of specially prepared scoleodonts from the Albian sandstone of the lower Niagara gorge, Niagara county, New York, from Mr. R. R. Hibbard, Buffalo, New York.

A collection of rare bryozoa from Gaspé from the Quebec Bureau of Mines.

Ordovician corals from the University of Wyoming from Professor H. D. Thomas.

Two large Humber river limestone slabs with fossils, from the Directors of the Park Lawn cemetery.

Collection of modern bryozoa *Membranipora tuberculata* on gulfweed from Dr. E. M. Kindle, Ottawa.

Laboratory work:

During the summer and autumn of 1939 the vertebrate preparatory staff was engaged mainly in the preparation and mounting of the skeleton of the flesh-eating dinosaur *Gorgosaurus*. In this connection a series of vertebrae was borrowed from the American Museum of Natural History. Mr. Levi Sternberg made casts of these bones for future reference.

After the return of the expedition from Saskatchewan much time was spent preparing the Oligocene material. Subsequently Mr. Lindblad prepared the *Triceratops* bones. Additional work was done on two incomplete specimens of *Monoclonius* which will be the subject of study in the near future. Final preparation of the two hadrosaur skeletons sent to Pittsburgh was completed. This involved the casting of a skull by Mr. Sternberg. More recently Mr. Sternberg has been working on the small Oligocene mammals obtained by exchange.

The invertebrate preparator Mr. A. Crook, now serving with the Royal Canadian Air Force, prepared at least 150 microscopic sections to be used in an investigation dealing with Ordovician bryozoa of the Ottawa valley. In addition many Museum specimens have been cut and polished in an effort to improve the appearance of the present exhibits and, also, to conserve space.

New exhibits:

The most outstanding of these is the *Gorgosaurus* skeleton to which reference has already been made. Unfortunately it has not been possible to provide a protection of glass. In consequence, the specimen has suffered minor damage from vandalism.

A complete rearrangement of the Mammal Gallery was undertaken during

the year. This new scheme places the exhibits in chronological order, the former biological arrangement no longer appearing feasible.

Two standard cases of exhibits were arranged to show miscellaneous reptilian fossils.

The permanent invertebrate collections were greatly enriched by many rare specimens from the Narraway collection purchased during the previous year.

Research:

The study of the skull and part of the skeleton of *Edmontonia*, an armoured dinosaur, was completed and the results published. The titanothere remains from Saskatchewan were studied and the results prepared for publication. Short studies have been made on Tertiary stratigraphy in Saskatchewan, the sclerotic ring in the hadrosaurs, and *Micrichnus* tracks from Alberta. Mr. Raymond M. Sternberg, a graduate student, completed an important anatomical study of the head of the Devonian fish *Eusthenopteron*.

Studies in micropalaeontology include Gaspé bryozoa and Ontario ostracoda, some of the results of which have been already published.

As a result of a recent survey it has been shown that among the invertebrates the Museum is in possession of 1225 type specimens, specimens that are unique and incapable of duplication. A special catalogue of these types is being prepared for distribution and each specimen is being marked with the proper symbol. Such symbols have been authorised by the Palaeontological Society of America in order that type specimens in all well organised institutions might be similarly designated.

Educational activities:

Assistance has been given by members of the staff and by Mr. Raymond Sternberg in conducting through the galleries numerous out-of-town classes. Occasional groups of local children have, also, been instructed. Numerous inquiries regarding fossils have been answered, either verbally, or by mail.

(28) STATEMENT REGARDING THE EDUCATIONAL WORK OF THE ROYAL ONTARIO MUSEUM

(Helen Reynar, Secretary-Treasurer)

In September, as a war-time economy measure, the Provincial Government made a drastic reduction in its grants to the Royal Ontario Museum for the year ending 30th June, 1940.

One of the first steps taken in an effort to cut down maintenance costs was to close the building to the public on Mondays and on the forenoons of the remaining days of the week. This restriction in visiting hours seriously curtailed the educational activities of the Museum. The following services were withdrawn immediately: the course of free public lectures which had been given each year on Tuesdays at five o'clock under the auspices of the Committee of Directors; several pay lecture courses advertised by Miss Ruth M. Home for the fall and winter season; the 'Open Evenings' for organised groups; art classes scheduled for the morning hours by the Ontario College of Art and the Technical Schools; and the Saturday morning moving picture programmes for children.

In spite of the many difficulties which confronted the Division of Public Instruction at the outset, a most successful year was achieved, largely through unexpected assistance obtained through the good offices of the Honourable G. H. Ferguson, a member of the Board of Trustees. Two patrons, who wish to remain anonymous, hearing of the need, came to the rescue with gifts to promote the work with the children—the first, a 16 mm. moving picture projector, of the latest model, complete with arc light and beaded screen—a long-felt want, and the second—the handsome sum of $2500.00. These gifts have enabled the

Museum to provide more adequately for the many groups of children that have come to the Museum for instruction during the year. An attractive short motion picture film in colour of the Royal Visit to Toronto was a further gift which has added much to the enjoyment of visiting children.

The Supervisor of the Division of Public Instruction, Miss Ruth M. Home, reports as follows on the work carried on under her direction during the year

Courses for Teachers:

Acting on the advice of educationalists in the city, an invitation was extended to Grade IV teachers of Toronto and vicinity to attend special classes designed to help them in their programme of "Social Studies". Ninety-five teachers availed themselves of this opportunity and later brought their pupils to see the material which had been under discussion.

Moving Pictures for Children:

Special moving pictures were shown in the theatre during Christmas and Easter weeks, with an attendance of 5,527. To cut down on rental and transportation costs, and also to have suitable films available at a moment's notice, several interesting educational films were purchased.

The Children's Room:

Much-needed material for teaching purposes, such as photographs, maps, slides, models, etc., was purchased out of the special fund for children's work. Although activities in the children's room did not commence until late in the season, extensive use was made of it on Saturday mornings by the Junior Field Naturalists' Club and by small groups of children interested in drawing and modelling, the attendance ranging from ten to seventy-five a day.

Out-of-Town Groups:

That interest in the Museum is steadily increasing throughout the Province is evidenced by the large number of children that visited the Museum during the year, totalling 5,716. Among the towns and cities taking advantage of this service were the following: Aurora, Barrie, Brampton, Bowmanville, Burford, Clarkson, Campbellville, Chatham, Dunbarton, Dundas, Fenwick, Fonthill, Fergus, Guelph, Hamilton, Humberston, Ingersoll, Islington, Kitchener, Long Branch, Mimico, Milverton, Markham, North Bay, Oakville, Peterborough, St. Catharines, Sudbury, Sutton, Stratford, Stevensville, Waterdown, Waterloo, Welland, Woodstock.

As in former years, the Boy Scouts organisation gave valuable assistance on Saturdays when the groups consisted of 400 or more. This voluntary service is an important factor in the efficient handling of these large groups.

Many members of the staff co-operate on these occasions by giving gallery talks, and this assistance is augmented by several competent lecturers from outside who are paid from the special fund for this purpose.

Classes for School Children:

Instruction was given by Miss Home and her assistants to 5,072 children from the public schools of Toronto and York County; to 3,877 from private schools, and to 1,477 from high schools.

Miscellaneous Groups:

During the year many requests for talks on the museum collections were received from women's clubs and societies, vacation schools, conventions, the College of Education, the College of Art, etc.

Public School Classes—Miss Lilian J. Payne

During the school year Miss Lilian J. Payne, teacher under the Board of Education stationed at the Museum, lectured to 601 classes from Grades VI,

VII, and VIII, with an attendance of 23,395. This number is considerably less than last year due to the fact that classes were not admitted on Mondays from October 1st to the end of June. Special arrangements are being made this year whereby Miss Payne is to have the exclusive privilege of holding classes on Mondays, commencing September 1st.

Of the 42 subjects offered to schools by Miss Payne, those most frequently chosen were the following: The Egyptian Galleries, Roman Britain, Indian Life, Prehistoric Man, Primitive Travel, Arms and Armour, 16th Century England, Paper and Printing, Natural History Tours, Chinese Galleries.

In addition to the activities carried on under the direction of Miss Home and Miss Payne, 3,767 visits were paid by art students from the Ontario College of Art and Technical Schools, and 9,300 visits by undergraduate and graduate students of the University of Toronto. Increasing use is being made of the Museum for special study and research.

The total attendance for the year ending 30th June was 227,187. Of this number at least 58,131 visited the Museum for purposes of instruction and study.

(29) REPORT OF THE DIRECTOR OF THE DAVID DUNLAP OBSERVATORY

(Professor R. K. Young)

The 74-inch telescope continues to perform satisfactorily. Since its installation no serious changes or repairs have been necessary. Observing conditions during the past year have been about average. The large telescope was used during 1,324 working hours as compared with a five year mean of 1,272. 1,144 spectrograms and direct photographs were obtained as compared with a five year average of 1,145. To date, 5,777 exposures have been made with the large telescope.

Several pieces of apparatus have been constructed during the year and starts made on others in order to supplement the equipment of the observatory. A blink microscope has been completed and is now in use in a survey of variable star plates taken in Arizona. A new instrument for aerial navigation has been designed and constructed by Dr. Hogg. Work on a large dispersion spectrograph, started last year, has been continued. Among the projects started during the year may be mentioned a large vacuum tank and subsidiary apparatus for aluminizing the main mirror of the 74-inch telescope. If war conditions do not prevent the construction of the details of this apparatus it is hoped to push it to completion before another year.

There are now 3839 volumes in the library. Of this number 1761 are on loan from the Royal Astronomical Society of Canada and 299 from the Dominion Meteorological Service. The accessions during the year number 144. In addition there is a large amount of unbound material not included in the above figures.

The trees around the observatory grounds which were set out last year under the supervision of the Superintendent have made good progress and nearly 500 additional trees have been transplanted from the nursery stock to places about the grounds.

During the year approximately 3620 visitors were shown through the observatory or took the opportunity to view the sky through the large telescope.

(30) REPORT OF THE OFFICER COMMANDING THE UNIVERSITY OF TORONTO C.O.T.C.

(Lt.-Col. H. H. Madill, V.D.)

I have the honour to submit the report on the activities of the University of Toronto Contingent, Canadian Officers Training Corps for the academic year 1939-40.

The opening of the session 1939-40 once more found Canada at war and the U. of T. Contingent C.O.T.C. immediately felt the full implication of all it meant.

In the spring of 1939 the Board of Governors purchased the property at 119 St: George Street for the use of the Contingent and during the summer a drill hall was built at the rear of the house and the interior of the house was altered to give the necessary accommodation for orderly room, offices, lecture rooms and stores. At the opening of the session the Headquarters of the Corps was moved from 184 College Street to the new location. Although the facilities of the new quarters were designed for the peace time accommodation of about three hundred members, these limited quarters were of inestimable value in view of the greatly increased membership in the unit. Accommodation in various other university buildings was also placed at our disposal.

Previous to the opening of the session, notification was received that the Infantry drill was changed and that among the changes the old "form fours" disappeared, and the new "three rank" drill took its place. As this was new to practically all Officers and N.C.O.'s, special classes were held from about the middle of September to train instructors, in order that there might be no delay in starting training.

The President of the University stated in his opening address that it was the policy of the Department of National Defence not to take undergraduates in the Canadian Active Service Force at once but that they should be encouraged to complete their courses and in that way become able to render more effective aid to the cause when the time came. Therefore few students left the University during the session to go on active service.

The rush to join the Corps started with registration, and there were hundreds of requests from outside the University for permission to enlist. Authority was given to enlist graduates of any University, in addition to the undergraduates of our own University. Within two weeks about one thousand three hundred undergraduates and five hundred graduates joined, and it was necessary to stop taking on recruits, or the strength could probably have been doubled.

Application was made to increase the four company establishment to twelve companies. Authority was granted for this increase in December. Eight were undergraduate companies and four were graduate. This provided for an authorised strength of about 1400 all ranks.

Training for the War Office certificates "A" and "B" was discontinued, and the syllabus of training as laid down for promotion to Lieutenant in the Non-Permanent Active Militia of Canada was entered upon. The classes were divided into two groups, those qualifying in one year and those qualifying in two years. Those qualifying in one year were largely senior students and graduates, while those who were in the junior years went into the two year course.

There was a great shortage of manuals for instruction at the opening of the term and this lack was met in various ways. A small pamphlet on the new drill was printed. A pamphlet was prepared covering the work required for the first paper including map reading, organisation, administration, field engineering, etc. Large numbers of multigraphed preces were also published, on various subjects of the course. The Students' Administrative Council purchased a Gestetner machine for our use and arranged with volunteer workers to cut the stencils required. This was a contribution which was of inestimable value to the work of the Corps and thanks is extended to each individual who took part in it. No Manuals on Military Law, or K.R. & O.'s were available and Prof. (Major) C. R. Young, a former officer of the C.O.T.C. agreed to give the military law lectures and to publish a pamphlet "Notes on Elementary Military Law for Canadian Officers". These publications met with a large demand throughout Canada, both in the N.P.A.M. and the C.A.S.F.

Two written papers are required for qualification, the first one "common

to all arms" the second one "special to arm". The first paper for the one year course was written the middle of December, and the first paper for the two year course, and the second paper for the one year course were written the middle of March.

Uniforms were issued to non-commissioned officers but not to cadets, as there were insufficient in stores for issue to the entire contingent, during the academic year. Uniforms were issued to the three hundred attending camp in June. Fatigue trousers and two shirts were provided each of these members. These latter were provided out of contingent funds as none were available in time from ordnance.

Instruction was provided in artillery, engineers, signals, infantry (rifle), infantry (machine gun), Army Service Corps, Army Medical Corps, Army Dental Corps, and ordnance (O.M.E.) Numerous offers were made by former officers to assist with the instruction of the large numbers. It was possible to make use of a few of these, but in many cases, the offer had to be gratefully declined. The generous offers of assistance, however, were much appreciated.

The following table shows the numbers who wrote the 1st and 2nd papers in December and March. Candidates in the two year course who wrote the 1st paper in March are not classified as to the arm of the service in which they intend to specialise.

Arm	1st Paper December 1939	1st Paper March 16, 1940	2nd Paper March 17, 1940
Artillery	191	53	155
Engineers	67	28	48
Signals	31	4	20
Infantry (Rifle)	99	13	80
Infantry (M.G.)	82	8	65
Army Service Corps	48	20	44
Army Medical Corps	58	4	50
Army Dental Corps	30	7	
Ordnance Mechanical Engineers		2	
Junior Companies (2 year course)		496	
	606	635	462

The Contingent paraded on November 11, 1939, to the Memorial Service at the Soldiers' Tower. This was the only occasion during the session when the entire contingent turned out as a unit. A uniformed guard of honour was provided.

A tactical demonstration of a platoon in the attack was carried out at Leaside on a Saturday afternoon in December and was attended by many members of the Corps.

The annual inspection was held during the latter part of February and differed from others in that no formal inspection was held and the various classes were examined as they carried out their "special to arm" training.

In addition to passing the 1st and 2nd written papers it is also necessary for candidates to pass a practical examination. Arrangements were made to do this either at local headquarters at the close of the academic examinations or at camp in June.

The Contingent was authorised to attend camp at Niagara from June 10 to 22, 1940, with a strength of 300. The camp was an excellent one and was most successful in every way and those who attended received training and experience impossible to give at local Headquarters. The facilities provided by Headquarters M.D. 2 were most satisfactory and those attending benefited greatly by the two weeks under canvas. The organisation by companies was as follows:

No. 1 Company—Artillery
No. 2 " Engineers, Signals, and R.C.A.S.C.
No. 3 " Infantry (Rifle)
No. 4 " Infantry (Machine Gun)
No. 5 " Medicals and details

The C.O.T.C. Ball, which has become one of the outstanding social events around the University, was held at Hart House, on January 12, 1940, and, as usual, was a very successful function.

The work during the term demanded a tremendous amount of time of all members of the Contingent but especially those taking the one year course and it was felt that some credit should be given toward academic work at the time of examinations to compensate undergraduates to some extent for the time spent. Representations were made and the Senate at its meeting of February 9, 1940, passed the following resolution:

"That the Senate authorises the Councils of the various faculties of the University to give due consideration, in the results of the annual examinations, to the work, over and above their ordinary academic requirements, done by those undergraduates who will have fulfilled the requirements of the Canadian Officers Training Corps."

The resolution of the Senate was implemented by the Councils of the various faculties under their own arrangements.

A severe loss was sustained in December through the death of Sergeant Major W. Hunt who had served the Corps since its formation. Well known to all members since 1914 and an indefatigable worker in the interests of the unit he is greatly missed.

The contingent staff for 1939-40 was as follows:

Honorary Colonel	Col. the Hon. H. J. Cody, E.D.
Officer Commanding	Lt.-Col. H. H. Madill, V.D., m.s.c.
Second in Command	Major W. S. Wilson
Chief Instructor	Major M. B. Watson, m.s.c.
Adjutant	Capt. L. F. Koyl
Paymaster	Major T. A. Reed, E.D.
Quartermaster	
Medical Officers	Major J. L. McCollum, R.C.A.M.C.
	Lieut. R. D. Barron, R.C.A.M.C.
Chaplain	Capt. W. C. Lockhart
Contingent Sergeant Major	J. F. Westhead

Company Commanders:

A1 Company	Capt. C. D. Beatty
A2 Company	Capt. W. E. Carswell
B1 Company	Capt. F. R. Chown
B2 Company	Capt. J. W. Graham
C1 Company	Capt. W. H. Bonus
C2 Company	Capt. G. T. Hodgson
D1 Company	Capt. F. R. Crocombe
D2 Company	Lieut. J. W. McClennan
J Company	Capt. W. L. Sagar
K Company	Capt. B. E. Tolton
L Company	Capt. D. McCormack
M Company	Capt. E. G. Moogk

Since returning from camp a great many requests have been received for those who have completed their officers' training qualifications, both from the C.A.S.F. and the N.P.A.M.; in fact the demand already exceeds the supply in engineers, infantry (rifle) and infantry (M.G.). This is most gratifying as it shows that the work which has been carried out during the past session has been a tangible contribution to Canada's war effort.

Owing to the fact that training in the C.O.T.C. has for a number of years been accepted in lieu of the physical training required in the first and second years, there has been a close co-operation between the Athletic Association and this unit. With the much increased activities this year the same spirit of co-operation contributed greatly to the success of the work and I wish to express my appreciation to the officials of the Athletic Association for their untiring efforts in this connection.

The session just ended has been marked with intense interest and seriousness on the part of the cadets taking the instruction, and tolerance of the difficulties

and drawbacks under which the instruction was given. It was also marked with the devotion of those giving the instruction, who have sacrificed their own time and energy, often to the exclusion of all else, in order that the need might be met.

(31) REPORT OF THE SECRETARY-TREASURER OF THE STUDENTS' ADMINISTRATIVE COUNCIL

(*E. A. Macdonald, B.A.*)

Provision was made in the University Act of 1906 for the Students' Administrative Council to act as the representative body of the students of the University of Toronto and to afford a recognised means of communication between the university authorities and the student body. Since that date the scope of its activities has greatly increased.

The Students' Administrative Council is composed of the presidents or the elected heads of every official undergraduate body, both men and women, of all the colleges and faculties which go to make up the University of Toronto. It is therefore a thoroughly representative university organisation, and is a powerful unifying force in the university. There are as well two members of the staff appointed by the President as his representatives on the Council, Professor S. N. F. Chant and Dr. F. R. Lorriman. There is also the president, who must be a graduate of not more than five years' standing, the general secretary-treasurer, and the associate secretary.

The work of the Council is carried on by six important sub-committees, the Publications Committee, the Finance Committee, the Debates Committee, the Sporting Activities Committee, the Loan Committee, and the Committee on Student Service. All committees have performed their work during the past academic year in a most commendable manner, and much constructive action for the benefit of the whole student body of the university has been the result.

The publications of the Council again this year included the *Students' Handbook*, which was given free of charge to every undergraduate on registration in the fall. In the book this year was much valuable information about the university, together with the names and telephone numbers of the officers of every undergraduate society and organisation of every faculty and college in the university. One hundred issues of *The Varsity* were published throughout the term five days a week. Approximately six thousand copies were printed each day. A staff of more than one hundred and twenty-five students is responsible for the news and feature writing and the technical work of producing the paper, which is supervised by the Publications Committee of the Council. There is also the great army of reporters that form the backbone of every newspaper. These are drawn from every college and faculty in the university, both men and women students. *The Varsity* has been of inestimable value in the past few years in the University of Toronto. It is a great unifying factor, and a great instrument for good. The members of the staff have realised that they are custodians in no small measure of the good name of the university, and this responsibility was discharged in a most satisfactory manner during the past year. Under the editor of the past year, Mr. Seaborn Albright of the third year in University College, *The Varsity* has had a most successful year, and in the midst of difficult times the editor and his staff have exercised extraordinarily good judgment.

Fifteen hundred and seventy-five copies of *Torontonensis* were published during the past academic year. The editor was Mr. Ralph Ireland, registered in fourth year, University College. We were privileged this year to dedicate the 1940 edition of *Torontonensis* to the officers and men of the Canadian Officers Training Corps, which since the outbreak of the war has been the most important

activity of the men undergraduates. *Torontonensis* provides one of the most important and valuable records of undergraduate activities in the entire university. It contains the photograph and biography of every member of the graduating year, a record of every athletic team and of every undergraduate organisation and fraternity, together with exceptionally fine views of the university. It is also a great unifying influence in the university, as students from every college and faculty make up the staff of the year book.

At the outbreak of the war undergraduates and graduates in large numbers enlisted in the Canadian Officers Training Corps. The supply of text books, pamphlets, etc., on which the courses to qualify in the various arms of the service were based, was not nearly sufficient. To meet the need of distributing information among such a large number, the Council purchased for the use of the Canadian Officers Training Corps an up-to-date electric reproducing Gestetner machine, which will be at the Corps Headquarters for the duration of hostilities. In addition, the Council office organised a corps of voluntary workers who each day throughout the term gave up their time to cut stencils and do typing for the members of the corps. The Officer Commanding conveyed the appreciation of himself and of the corps for this bit of war work which the Council was privileged to undertake.

The Council was host again this year at the garden parties given on June 8th and 9th following the conferring of degrees at Convocation Hall. The President of the University and Mrs. Cody, the President of the Students' Administrative Council, the Vice-Presidents of the Council, the President of the Engineering Society, the President of the Medical Society and the President of the Dental Parliament received the guests at the Thursday garden party. At the party on Friday, the President and Mrs. Cody and the President and Vice-Presidents of the Students' Administrative Council received the guests. At both garden parties, Dr. Cody presented the honour awards of the Students' Administrative Council. Fifty students in the graduating year, selected by the Council, received this award on the day of their graduation. This award is given for an outstanding contribution to the undergraduate life of the university.

Through the co-operation of the Council, the Graduation Ball was again held in Hart House on Friday, June 9th. The beauty of the whole occasion will remain long in the minds of those who attended the function. This was by far the largest social function of the year. Some 2500 people attended the ball. All the arrangements for this event were carried out through the Council office.

The Council held membership in the National Federation of Canadian University Students, and is by far the largest financial contributor to this organisation. The headquarters of this organisation were last year located in the Council office.

The Committee on Sporting Activities looked after the organisation and administration of the University of Toronto Band. In view of wartime conditions and the necessary curtailment of expenditures, it was decided that the band should not be sent with the rugby team to the out-of-town games. However, at all the home games it was in attendance, and the excellent music added much to the enjoyment of the crowds which were present at these games. The band comprises approximately sixty students from the various component parts of the university. The Council again provided students to act as marshals and take charge of the student admission to the rugby and hockey games, and also the special admission to the skating rink. An Introduction Committee which performed a necessary service at the skating rink was organised by the Council.

A successful year was enjoyed by the University of Toronto Symphony Orchestra, which for the past season has been under the direction of Mr. Donald Ryerson of the Ontario College of Education. As in the previous year, an invitation to perform in Guelph was received from the Ontario Agricultural College, and in February the orchestra travelled to Guelph by bus and played

to a packed hall. The annual concert in Convocation Hall, admission to which is free to the student body, was also well attended. The orchestra has about forty members, representative of the whole university.

In view of the popularity of the ski week-ends which were inaugurated in the previous winter, the Council organised a similar trip to Limberlost Lodge, near Huntsville, and a longer trip to Lac Mercier in the Laurentians during the Christmas holidays. Both of these were attended to the capacity which the accommodation would allow.

On the morning of November 11th it was the privilege of the members of the Council to meet with the President and members of the Board of Governors and proceed with them to the Service of Remembrance at the Memorial Tower.

The policy of the Students' Administrative Council to devote the major part of its energies to the giving of practical assistance to worthy and needy students was continued this year. The services of the Council were extended through the loan fund, the housing service and the employment bureau.

The Loan Fund is administered by the Loan Committee of the Council, under the chairmanship of Mr. J. J. Gibson of the Board of Governors. Appropriations totalling $14,500 have been made from the surplus funds of the Council for this purpose. The loans from this fund have enabled a large number of students to bring their university courses to completion. The students to whom loans have been made have co-operated admirably in the purpose of the fund by making prompt and satisfactory repayments, so that the Council has been able to make loans to the amount of approximately $32,000. During the past year about $7,000 was distributed in loans to students. The sincere thanks of the Council are due to Mr. J. J. Gibson for his invaluable aid in the administration of the Loan Fund. The success of the whole service provided by the fund owes much to his experience and good judgment.

The Housing Service was again operated most successfully last year. During the summer, rooms in two hundred and twenty-seven boarding and rooming houses in the vicinity of the university were carefully inspected, and all pertinent information was recorded on a card index in the Council office, after which the rooms were graded and divided into districts, and a master list made up. A large number of students took advantage of this service in the fall, as well as many parents bringing sons and daughters to the university for the first time. The master list is kept on file and is referred to by students throughout the year. Many staff members have also taken advantage of this service. Through this service the Council is able to get lower rates for room and board than individual students could obtain, and each year a number of homes are listed where free room or board, or both, will be provided in exchange for services about the house. This has been of the greatest assistance to a number of students who are in difficult financial circumstances.

The employment bureau has expanded still more in the past year, and has been more active than ever before. Each year more students are enabled to finance their courses with the help of this service. The students referred to positions are selected with care, and their performance in such positions has established a high standard of efficiency, which is becoming known among employers. The bureau provides part-time work throughout the term and full-time during the summer and Christmas holidays, and a great many full-time jobs for graduates have been secured incidentally. Over two thousand references to positions were given to students during the past year.

At the suggestion of the President of the University and the Students' Administrative Council, the officers of the Council continued this year to keep in touch with the most advanced student aid and personnel work in the United States. In February, Professor S. N. F. Chant and Mr. E. A. Macdonald attended a conference of the American College Personnel Association in St. Louis, with a view to the more efficient organisation of the work of student service in the University of Toronto.

The various services of the Council have been greatly appreciated by those who have benefited from them; so much so that an amount of approximately $1,900 has been given to the secretary-treasurer from various donors, quite unsolicited, to help worthy students who require such assistance. The gratitude of the Council is due to the donors of this money, which is a very welcome aid to the work of assisting students. A full account of the operation of this fund is sent to the President of the University. Already students who have been helped from this source have repaid the money, although they were under no obligation to do so, and have sent in some cases extra donations as well.

The second-hand book exchange for women students was again operated this year. Many hundreds of books are brought in and resold each year.

In the fall, the members of the Students' Administrative Council were the guests of Dr. and Mrs. Cody at a delightful dinner, which has become one of the happiest occasions of the year.

APPENDIX B

REPORT OF THE REGISTRAR

(A. B. Fennell, Esq., M.A.)

I beg to submit the following statistics for the year ending June 30th, 1940:—

(*a*) Distribution of the staff of the University and University College (furnished by the Bursar).

(*b*) Distribution of the staffs of the federated Arts Colleges (furnished by the Registrars of the colleges).

(*c*) Registration of students by faculties and years.

(*d*) Enrolment in the Arts Colleges (furnished by the Registrars of the colleges).

(*e*) Enrolment in the university departments in Arts (furnished by the departments).

(*f*) Registration in courses in the Faculty of Arts.

(*g*) Registration in courses in the School of Graduate Studies (furnished by the Secretary of the School).

(*h*) Results of annual examinations (furnished by the Secretaries of the faculties).

(*i*) Admission to degrees.

(*j*) Admission to diplomas and certificates.

(*k*) Geographical distribution of students (furnished by the Secretaries of the faculties).

(*a*) Distribution of the Staff of the University and University College:

	Professors	Associate Professors	Assistant Professors	Associates	Lecturers	Directors	Assistant Directors	Instructors	Other Sessional Appointments
University (Faculty of Arts).....	49	37	32	1	34	—	—	7	129
University College.....	17*a*	6	11	—	7	—	—	—	1
Faculty of Medicine.....	25*b*	7	29*c*	28	19*c*	—	—	—	227
Faculty of Applied Science and Engineering.....	16	14	9	—	21	—	—	12	44
Faculty of Household Science....	2	—	2	—	6	—	—	2	5
Ontario College of Education....	7	5	4	—	21*b*	—	—	28	—
Faculty of Forestry.....	2	2	2	—	2	—	—	—	—
Faculty of Music.....	2	—	—	—	—	—	—	—	—
Faculty of Dentistry.....	9	10	1	19	3	—	—	4	7
Social Science.....	—	1	1	—	16*b*	—	—	—	—
School of Nursing.....	—	—	—	—	33*d*	1	1	—	—

a 1 also in University
b 1 also in Arts
c 1 also in Dentistry
d 2 also in Arts; 12 also in Medicine; 1 also in Ontario College of Education; 1 also in Dentistry.

(*b*) Distribution of the Staffs of the Federated Arts Colleges:

	Victoria College	Trinity College	St. Michael's College
Professors.....	11	10	14
Associate professors.....	8	5	2
Assistant professors.....	3	..	2
Lecturers.....	10	5	9
Instructors.....	1	..	..
Fellows.....	..	..	..
Readers.....	2	2	..

(c) Registration of Students by Faculties and Years:

The number of students registered in the university, in colleges and faculties, in the session 1939-40 was 7,161, distributed as follows:

				Men	Women	Total
Faculty of Arts				2,085	1,563	3,648
University of Toronto	640	311	951			
University College	530	549	1,079			
Victoria College	443	426	869			
Trinity College	220	176	396			
St. Michael's College	252	101	353			
Faculty of Medicine				753	64	817
Faculty of Applied Science and Engineering				949	12	961
Faculty of Household Science				...	50	50
Ontario College of Education				486	336	822
Faculty of Forestry				42	...	42
Faculty of Music				26	24	50
School of Graduate Studies				419	109	528
Faculty of Dentistry				245	20	265
Registered twice				19	3	22
				4,986	2,175	7,161

In departments there were registered 675, distributed as follows:

Department of Social Science	12	79	91
School of Nursing	...	386	386
Physical Education for Women	...	27	27
University Extension (Occupational Therapy)	...	63	63
University Extension (Physiotherapy)	...	58	58
University Extension (Aerial Navigation)	50	...	50
	62	613	675

The grand total of registration for the whole university was 7,811, of whom 5,048 were men and 2,763 were women.

In addition there were 4,244 persons registered in the Department of University Extension in courses and at provincial centres which are referred to in detail in Appendix A (14).

The figures may be further analysed as follows:

Faculty of Arts

University of Toronto

	Men	Women	Total
Teachers' Classes and Summer Session	355	273	628
Occasional Arts students	285	38	323
	640	311	951

University College

	Men	Women	Total
First year undergraduates	144	174	318
Second year undergraduates	136	162	298
Third year undergraduates	156	147	303
Fourth year undergraduates	82	54	136
Occasional students	11	10	21
Exchange students	1	2	3
	530	549	1,079

Victoria College

	Men	Women	Total
First year undergraduates	149	143	292
Second year undergraduates	120	119	239
Third year undergraduates	105	101	206
Fourth year undergraduates	64	58	122
Occasional students	5	4	9
Exchange student	...	1	1
	443	426	869

Trinity College

	Men	Women	Total
First year undergraduates	80	59	139
Second year undergraduates	59	60	119
Third year undergraduates	42	45	87
Fourth year undergraduates	38	9	47
Occasional students	1	3	4
	220	176	396

St. Michael's College

	Men	Women	Total
First year undergraduates	101	40	141
Second year undergraduates	70	24	94
Third year undergraduates	71	26	97
Fourth year undergraduates	7	11	18
Occasional students	3	..	3
	252	101	353

Faculty of Medicine

	Men	Women	Total
First year undergraduates	141	7	148
Second year undergraduates	114	11	125
Third year undergraduates	108	9	117
Fourth year undergraduates	111	7	118
Fifth year undergraduates	128	9	137
Sixth year undergraduates	122	10	132
Candidates for Degree of B.Sc. (Med.)	1	1	2
Candidates for Diploma in Psychiatry	5	1	6
Candidates for Diploma in Public Health	18	1	19
Candidate for Diploma in Radiology	1	..	1
Graduate students	4	8	12
	753	64	817

Faculty of Applied Science and Engineering

	Men	Women	Total
First year undergraduates	325	5	330
Second year undergraduates	230	6	236
Third year undergraduates	198	..	198
Fourth year undergraduates	195	1	196
Fifth year undergraduate	1	..	1
	949	12	961

Faculty of Household Science

	Men	Women	Total
First year undergraduates	..	6	6
Second year undergraduates	..	7	7
Third year undergraduates	..	22	22
Fourth year undergraduates	..	12	12
Occasional students	..	3	3
	..	50	50

Ontario College of Education

	Men	Women	Total
Teachers' Course:			
Students in attendance	153	185	338
Extra-mural students	122	64	186
Librarians' Course:			
Students in attendance	2	49	51
Extra-mural students	..	8	8
Bachelor of Pedagogy Course	218	30	248
Registered twice	9	..	9
	486	336	822

Faculty of Forestry

	Men	Women	Total
First year undergraduates	20	...	20
Second year undergraduates	13	...	13
Third year undergraduates	2	...	2
Fourth year undergraduates	7	...	7
	42	...	42

Faculty of Music

	Men	Women	Total
First year undergraduates	5	3	8
Second year undergraduates	6	13	19
Third year undergraduates	15	8	23
	26	24	50

School of Graduate Studies

	Men	Women	Total
Candidates for Degree of Ph.D	121	19	140
Candidates for Degree of M.A	130	56	186
Candidates for Degree of M.Com	3	...	3
Candidates for Degree of M.S	5	...	5
Candidates for Degree of M.A.Sc	14	...	14
Candidate for Degree of C.E	1	...	1
Candidate for Degree of E.E	1	...	1
Candidates for Degree of D.Paed	39	2	41
Candidate for Degree of M.Sc. (Dent.)	1	...	1
Candidates for Degree of M.S.A	27	...	27
Candidates for Degree of Mus.Doc	3	...	3
Candidates for Degree of D.V.Sc	2	...	2
Graduate students and Auditors	72	32	104
	419	109	528

Faculty of Dentistry

	Men	Women	Total
First year undergraduates	37	1	38
Second year undergraduates	57	2	59
Third year undergraduates	44	...	44
Fourth year undergraduates	46	...	46
Fifth year undergraduates	56	...	56
Candidates for Degree of B.Sc. (Dent.)	4	...	4
Candidates for Diploma in Dental Nursing	...	17	17
Occasional student	1	...	1
	245	20	265

Department of University Extension

	Men	Women	Total	Grand Total
B.A. Course				
Summer Session:				
Regular students	135	89	224	...
Occasional students	21	8	29	253
Teachers' Classes:				
Toronto:				
Regular students	250	178	428	...
Occasional students	13	2	15	...
Brampton:				
Regular students	5	10	15	458
Specialists' Courses				
Summer Session:				
Regular students	2	4	6	6
Registered twice	71	18	89	89
	355	273	628	628

Department of Social Science

	Men	Women	Total
First year full-time students	7	39	46
Second year full-time students	4	19	23
Part-time students	1	21	22
	12	79	91

School of Nursing

	Men	Women	Total
Full-time students	...	136	136
Part-time students	...	250	250
	...	386	386

(*d*) Enrolment in the Arts Colleges

(1) University College:

	English	Ethics	French	German	German (Sc.)	Greek	Greek and Roman History	Latin	Oriental History	Oriental Languages	Oriental Literature
First Year—											
Pass	145	13	201	26	47	6	35	9	15	10	79
Honour	56	..	44	20	..	3	3	12	..	..	..
Second Year—											
Pass	139	12	105	25	30	2	6	3	5	8	76
Honour	30	16	29	14	..	1	1	4	2	2	..
Third Year—											
Pass	108	50	43	14	..	3	11	4	9	11	89
General	3	2	2	..	..	..	..	..	..	..	..
Honour	32	23	30	16	..	1	16	6	2	5	..
Fourth Year—											
Pass	..	..	1	..	..	..	17	..	..	..	58
General	7	3	4	..	..	1	1	1	..	..	..
Honour	13	6	15	12	..	3	14	6	..	2	..
Totals—											
Pass	392	75	350	65	77	11	69	16	29	29	302
General	10	5	6	..	..	1	1	1	..	..	..
Honour	131	45	118	62	..	8	34	28	4	9	..
Teachers' Classes	90	16	40	1	..	..	..	..	..	..	..
Graduate Studies	48	..	16	5	..	5	2	5	..	6	..
Other Faculties	59	5	113	224	..	..	..	..	..	..	..
Grand Total	730	146	643	357	77	25	106	50	33	44	302

(2) Victoria College:

	English	Ethics	French	German	German (Sc.)	Greek	Greek and Roman History	Latin	Oriental History	Oriental Languages	Religious Know.
First Year—											
Pass	119	17	162	10	25	6	39	9	..	3	91
Honour	58	..	49	23	..	4	19	9	4	..	..
Second Year—											
Pass	96	5	80	5	24	8	8	2	5	3	65
Honour	26	13	27	11	..	1	4	7	1	1	..
Third Year—											
Pass	75	36	44	8	..	5	31	7	5	1	69
General	7	2	3	2	..	1	3	2	1	..	..
Honour	19	9	18	10	..	4	9	8	1	1	..
Fourth Year—											
Pass	..	12	..	1	..	1	36	..	..	..	26
General	8	2	10	3	..	..	5	..	..	..	..
Honour	17	2	19	15	..	3	8	4	2	2	..
Totals—											
Pass	290	70	286	24	49	20	114	18	10	7	251
General	15	4	13	5	..	1	8	2	1	..	..
Honour	120	24	113	59	..	12	40	28	8	4	..
Graduate Studies	11	4	1	2	..	1	..	1	..	3	..
Grand Total	436	102	413	90	49	34	162	49	19	14	251

(3) Trinity College:

	English	Ethics	French	German	German (Sc.)	Greek	Greek and Roman History	Latin	Oriental History	Oriental Languages	Religious Know.
First Year—											
Pass	58	7	88	8	11	1	9	4	..	3	86
Honour	20	..	12	4	..	2	10	6	1	..	..
Second Year—											
Pass	47	10	34	9	12	1	..	3	..	1	90
Honour	21	6	15	5	..	..	..	2	..	..	..
Third Year—											
Pass	41	10	32	7	3	1	..	..	..	..	57
General	..	..	2	2	..	..	..	..	..	..	..
Honour	3	3	3	2	..	1	2	2	..	..	..
Fourth Year—											
Pass	..	..	..	..	..	..	..	..	..	..	23
General	1	..	1	..	..	..	..	..	..	..	..
Honour	6	4	3	1	..	3	3	3	..	..	..
Totals—											
Pass	146	27	154	24	26	3	9	7	..	4	256
General	1	..	3	2	..	..	..	..	..	..	..
Honour	50	13	33	12	..	6	15	13	1	..	..
Grand Total	197	40	190	38	26	9	24	20	1	4	256

(4) St. Michael's College:

	English	Ethics	French	German	German (Sc.)	Greek	Greek and Roman History	Latin	Philosophy	Religious Know.
First Year—										
Pass	68	66	75	10	9	1	8	47	60	92
Honour	18	..	13	1	..	..	9	8	10	..
Second Year—										
Pass	44	44	36	1	4	5	..	20	29	62
Honour	4	..	9	1	..	2	2	9	6	..
Third Year—										
Pass	41	50	32	..	3	2	..	14	37	57
Honour	9	..	6	1	..	2	2	4	7	..
Fourth Year—										
Pass	..	..	..	..	..	..	..	..	..	15
Honour	3	..	8	1	..	1	6	6	3	..
Totals—										
Pass	153	160	143	12	16	8	8	81	126	226
Honour	34	..	36	4	..	5	17	27	26	..
Grand Total	187	160	179	16	16	13	25	108	152	226

(e) Enrolment in the University Departments in Arts:

The following tables exhibit the numbers attending lectures in the university departments in the Faculty of Arts, together with the number of those taking the practical work in the laboratories :

Department of Anthropology

	Pass	Pass and Honour	Honour
Faculty of Arts—			
First Year	128	80	28
Second Year	..	12	13
Fourth Year	..	28	6
Occasional Student	..	..	1
Faculty of Medicine—			
First Year	30	..	..
School of Graduate Studies	..	..	7
Totals	158	120	55

Number of students registered—333

Department of Applied Mathematics

	Pass	Pass and Honour	Honour
Faculty of Arts—			
First Year	6	..	..
Second Year	3	..	33
Third Year	3	..	29
Fourth Year	..	..	12
Occasional Students	3	..	..
Faculty of Applied Science and Engineering—			
Second Year	..	28	..
Third Year	..	10	..
Fourth Year	..	9	..
School of Graduate Studies	..	..	19
Totals	15	47	93

Number of students registered—155

Department of Archaeology

	Pass	Honour
Faculty of Arts—		
First Year	..	13
Second Year	37	30
Third Year	..	8
Fourth Year	..	24
School of Graduate Studies	..	4
Totals	37	79

Number of students registered—116

Department of Astronomy

	Pass	Pass and Honour	Honour	Laboratory
Faculty of Arts—				
First Year	17	..	..	..
Second Year	2	8	..	2
Third Year	5	..	24	19
Fourth Year	..	..	6	1
Teachers' Classes	44	..	..	44
Occasional Student	1	..	..	1
School of Graduate Studies	..	..	2	..
Department of University Extension—				
Aerial Navigation	36	..	..	..
Totals	105	8	32	67

Number of students registered—145

Department of Biology

	Lecture Courses				Laboratory Courses	
	1 or 2 or 3 hours		4 or 5 or 6 hours	7 or more hours		
	Pass	Honour	Honour	Honour	Pass	Honour
Faculty of Arts—						
First Year	204	103	..	..	95	103
Second Year	101	122	..	..	101	122
Third Year	77	24	..	4	66	16
Fourth Year	..	2	5	..	..	9
Occasional Students	2	..	..	..	1	..
Faculty of Medicine—						
First Year	..	147	..	..	..	147
Faculty of Household Science—						
First Year	..	7	..	..	..	7
Faculty of Forestry—						
First Year	..	18	..	..	..	18
Second Year	..	12	..	..	..	..
Third Year	..	1	..	..	..	..
Fourth Year	..	7		..	..	7
School of Graduate Studies	..	..	..	..	..	43
Faculty of Dentistry—						
First Year	..	38	..	..	..	38
School of Nursing	15	..	..	..	15	..
College of Optometry of Canada	..	24	..	..	..	24
Totals	399	505	5	4	278	534

Number of students registered—956

Department of Botany

	Lecture Courses		Laboratory Courses	
	1 or 2 or 3 hours			
	Pass	Honour	Pass	Honour
Faculty of Arts—				
First Year	5	120	5	120
Second Year	5	16	5	16
Third Year	11	6	11	6
Fourth Year	..	7	..	7
Teachers' Classes	25	..	25	..
Occasional Student	..	1	..	1
Faculty of Applied Science and Engineering—				
First Year	..	89	..	89
Fourth Year	..	2	..	2
Faculty of Household Science—				
First Year	..	6	..	6
Faculty of Forestry—				
Fourth Year	..	6	..	6
School of Graduate Studies	..	38	..	33
Ontario Agricultural College	..	4	..	4
Ontario College of Pharmacy				
First Year	..	85	..	85
Second Year	..	133	..	133
Totals	46	513	46	508

Number of students registered—559

Department of Chemistry

	Pass	Pass and Honour	Honour	Laboratory
Faculty of Arts—				
First Year	204	..	154	247
Second Year	95	..	131	180
Third Year	50	..	35	78
Fourth Year	3	..	12	12
Teachers' Classes, Summer Session	33	..	..	33
Occasional Students	..	..	5	2
Faculty of Medicine—				
First Year	..	151	..	151
Second Year	..	118	..	118
Faculty of Applied Science and Engineering—				
First Year	..	112	..	112
Second Year	..	75	..	75
Third Year	..	87	..	87
Fourth Year	..	31	..	28
Faculty of Household Science—				
First Year	..	6	..	5
Second Year	..	7	..	..
Faculty of Forestry—				
First Year	..	21	..	21
Second Year	..	2	..	..
School of Graduate Studies	..	51	..	33
Faculty of Dentistry—				
First Year	..	39	..	39
Second Year	..	59	..	..
Third Year	..	44	..	44
Ontario College of Pharmacy—				
First Year	..	85	..	85
Second Year	..	134	..	134
Department of University Extension—				
Evening Classes	47	..	..	47
Totals	432	1,022	337	1,531

Number of students registered—1,785

Department of Fine Art

	Pass	Pass and Honour	Honour	Laboratory
Faculty of Arts—				
First Year	34	..	13	..
Second Year	41	19	6	..
Third Year	30	29	7	..
Fourth Year	..	24	8	1
Occasional Student	..	..	1	..
School of Graduate Studies	..	..	1	..
Totals	105	72	36	1

Number of students registered—214

Department of Food Chemistry
(Faculty of Household Science)

	Pass	Pass and Honour	Honour	Laboratory
Faculty of Arts—				
Second Year	44	..	64	45
Third Year	21	..	..	21
Fourth Year	..	..	30	30
Occasional Student	..	..	1	1
Faculty of Applied Science and Engineering—				
Fourth Year	..	..	1	1
Faculty of Household Science—				
Second Year	..	7	..	7
Third Year	17	..	..	17
Fourth Year	..	..	12	12
Occasional Students	..	..	2	2
School of Graduate Studies	..	1	4	5
Totals	82	8	114	141

Number of students registered—203

Department of Geography

	Pass	Honour	Laboratory
Faculty of Arts—			
First Year	87	32	119
Second Year	51	25	76
Third Year	51	..	51
Teachers' Classes	55	..	55
Occasional Students	1	1	2
Ontario College of Education	307	..	..
School of Graduate Studies	..	7	7
Totals	552	65	310

Number of students registered—617

Department of Geology and Palaeontology

	Lecture Courses					Laboratory Courses	
	1 or 2 or 3 hours		4 or 5 or 6 hours		7 or more hours		
	Pass	Honour	Pass	Honour	Honour	Pass	Honour
Faculty of Arts—							
First Year	113	47	..	..	..	..	..
Second Year	22	29	..	..	..	22	29
Third Year	9	..	1	4	..	2	4
Fourth Year	8	..	1	4	4	1	19
Teachers' Classes	25	..	..	..	..	25	..
Occasional Students	2	..	..	..	..	2	..
Faculty of Applied Science and Engineering—							
Second Year	65	..	..	..	..	48	..
Third Year	59	..	7	..	..	40	..
Fourth Year	43	..	2	..	..	4	..
Faculty of Forestry—							
Second Year	13	..	..	..	..	..	..
Third Year	2	..	..	..	..	..	..
School of Graduate Studies	..	3	..	..	13	..	18
Totals	361	79	11	8	17	144	70

Number of students registered—462

Department of History

	Lecture Courses			
	1 or 2 or 3 hours		4 or 5 or 6 hours	7 or more hours
	Pass	Honour	Honour	Honour
Faculty of Arts—				
First Year	94	140	..	..
Second Year	107	74	..	28
Third Year	124	85	..	21
Fourth Year	10	15	..	20
Teachers' Classes	45	..	..	..
Occasional Students	9	4	..	..
Faculty of Medicine—				
First Year	34	..	..	..
School of Graduate Studies	..	..	25	..
Totals	423	318	25	69

Number of students registered—835

Department of Household Science
(Faculty of Household Science)

	Pass	Pass and Honour	Honour	Laboratory
Faculty of Arts—				
First Year	..	..	57	..
Second Year	28	..	63	91
Third Year	17	4	37	58
Fourth Year	..	4	23	27
Faculty of Household Science—				
First Year	..	7	..	..
Second Year	..	7	..	7
Third Year	16	..	5	21
Fourth Year	..	..	11	11
Occasional Students	..	..	3	2
School of Graduate Studies	..	..	5	3
Totals	61	22	204	220

Number of students registered—287

Department of Italian and Spanish

	Italian		Spanish	
	Pass	Honour	Pass	Honour
Faculty of Arts—				
First Year	17	3	136	30
Second Year	8	5	57	22
Third Year	15	6	51	10
Fourth Year	..	5	..	17
School of Graduate Studies	..	5	..	4
Totals	40	24	244	83

Number of students registered in Italian 64, and in Spanish 327

Department of Law

	Pass	Honour
Faculty of Arts—		
First Year	31	102
Second Year	..	9
Third Year	..	34
Fourth Year	..	33
Faculty of Applied Science and Engineering—		
Third Year	35	..
Faculty of Forestry—		
Third Year	2	..
School of Graduate Studies	..	6
Department of University Extension—		
Business Certificate	32	..
Evening Classes	20	..
Bachelor of Laws and Master of Laws Courses	..	12
Totals	120	196

Number of students registered—316

Department of Mathematics

	Lecture Courses					
	1 or 2 or 3 hours		4 or 5 or 6 hours		7 or more hours	
	Pass	Honour	Pass	Honour	Pass	Honour
Faculty of Arts—						
First Year	51	156	..	..	..	47
Second Year	79	124	..	..	..	22
Third Year	63	43	..	..	..	17
Fourth Year	1	4	..	..	..	4
Teachers' Classes	10	..	..	..	..	..
Occasional Students	..	..	..	..	..	6
Faculty of Applied Science and Engineering—						
First Year	252	..	77	..	..	..
Second Year	127	..	28	..	18	..
Third Year	14	..	..	..	..	..
Faculty of Forestry—						
First Year	20	..	..	..	..	..
School of Graduate Studies	..	7	..	10	..	..
College of Optometry of Canada	6	..	..	..	..	..
Totals	623	334	105	10	18	96

Number of students registered—1,186

Department of Military Studies

	Courses 1a, 2a, 3a			
	Pass	Commerce and Finance	Honour	Courses 1b, 2b
Faculty of Arts—				
First Year	64	34	31	55
Second Year	42	29	33	40
Third Year	42	20	60	10
Fourth Year	..	..	25	30
Occasional Students	..	..	..	7
Faculty of Medicine—				
First Year	..	..	..	47
Second Year	..	..	..	21
Third Year	..	..	..	10
Fourth, Fifth and Sixth Years	..	..	..	83
Faculty of Applied Science and Engineering—				
First Year	..	..	..	130
Second Year	..	..	..	94
Third Year	..	..	..	54
Fourth Year	..	..	..	65
Ontario College of Education	..	..	..	37
Faculty of Forestry—				
First Year	..	..	..	8
Second Year	..	..	..	7
Third Year	..	..	..	2
Fourth Year	..	..	..	1
Faculty of Dentistry—				
First Year	..	..	..	10
Second Year	..	..	..	8
Third Year	..	..	..	4
Fourth and Fifth Years	..	..	..	53
Ontario College of Pharmacy—				
First Year	..	..	..	15
Second Year	..	..	..	7
Totals	148	83	149	798

Number of students registered—1,178

Department of Mineralogy and Petrography

	Pass	Pass and Honour	Honour	Laboratory
Faculty of Arts—				
First Year	16	..	..	16
Second Year	..	..	31	31
Third Year	..	2	21	13
Fourth Year	..	1	8	9
Teachers' Classes	28	..	..	28
Occasional Students	..	2	..	2
Faculty of Applied Science and Engineering—				
First Year	..	152	..	152
Second Year	..	41	..	39
Third Year	..	34	..	34
Fourth Year	..	6	..	6
Faculty of Forestry—				
Second Year	..	13	..	13
School of Graduate Studies	..	..	20	14
Totals	44	251	80	257

Number of students registered—375

Department of Music

	Lecture Courses 4 or 5 or 6 hours Honour
Faculty of Arts—	
First Year	9
Second Year	8
Third Year	5
Total	22

Number of students registered—22

Department of Philosophy

	Pass	Honour
Faculty of Arts—		
First Year	62	120
Second Year	65	73
Third Year	190	77
Fourth Year	34	44
Teachers' Classes	16	..
Faculty of Medicine—		
First Year	9	..
School of Graduate Studies	..	57
Department of Social Science—		
First Year	13	..
Totals	389	371

Number of students registered—760

Department of Physics

	Pass	Pass and Honour	Honour	Laboratory
Faculty of Arts—				
First Year	154	..	139	196
Second Year	45	..	85	121
Third Year	45	..	49	90
Fourth Year	..	..	37	34
Occasional Students	..	..	2	2
Faculty of Medicine—				
First Year	..	148	..	148
Diploma in Radiology	..	1	..	1
Faculty of Applied Science and Engineering—				
First Year	..	..	18	18
Second Year	..	..	18	18
Third Year	..	..	10	10
Fourth Year	..	..	12	12
Faculty of Household Science—				
First Year	..	..	7	7
Candidates for Specialists' Certificates	..	..	10	10
Faculty of Forestry—				
First Year	19	..	..	19
School of Graduate Studies	..	..	62	36
Faculty of Dentistry—				
First Year	..	38	..	38
Department of University Extension—				
Aerial Navigation	..	53	..	53
Physiotherapy	38	..	..	38
College of Optometry of Canada	..	50	..	50
Totals	301	290	449	901

Number of students registered—1041

Department of Political Science

	Lecture Courses					
	1 or 2 or 3 hours		4 or 5 or 6 hours		7 or more hours	
	Pass	Honour	Pass	Honour	Pass	Honour
Faculty of Arts—						
First Year	78	62	26	106	..	..
Second Year	99	32	22	3	..	97
Third Year	127	58	2	12	..	62
Fourth Year	32	43	6	..	1	66
Teachers' Classes	49	..	..	..	..	..
Occasional Students	5	..	1	..	..	..
Faculty of Household Science—						
Second Year	7	..	..	..	..	..
Third Year	17	..	..	..	..	..
Faculty of Forestry—						
Third Year	2	..	..	..	..	..
School of Graduate Studies	..	10	..	8	..	11
Department of Social Science—						
First Year	..	13	..	..	..	..
Second Year	..	24	..	..	..	..
College of Optometry of Canada	26	..	..	..	..	..
Totals	442	242	57	129	1	236

Number of students registered—1,107

Department of Psychology

	Lecture Courses				Laboratory Courses	
	1 or 2 or 3 hours		4 or 5 or 6 hours	7 or more hours		
	Pass	Honour	Honour	Honour	Pass	Honour
Faculty of Arts—						
First Year.....	154	49	..	..	..	..
Second Year.....	159	26	..	9	159	25
Third Year.....	125	33	..	9	..	12
Fourth Year.....	..	80	4	11	..	19
Teachers' Classes..	165	..	..	..	30	..
Occasional Student.	1	..	..	..	..	..
Faculty of Medicine—						
Second Year.....	118	..	..	..	..	..
Third Year.....	..	..	..	..	..	7
Fourth Year.....	6	..	..	..	..	..
Fifth Year	16	..	..	..	..	..
Faculty of Household Science—						
First Year.....	2	..	..	..	..	..
Second Year.....	2	..	..	..	..	..
Third Year.....	18	..	..	..	..	..
Fourth Year.....	..	5	..	..	..	..
School of Graduate Studies.....	..	..	30	..	..	19
Department of Social Science—						
First Year.....	20	..	..	..	..	..
Second Year.....	6	..	..	..	..	..
School of Nursing...	71	..	..	..	..	..
Department of University Extension—						
Occupational Therapy.....	37	..	..	..	..	..
Physiotherapy....	38	..	..	..	..	..
Centralised Pupil Nurses.....	200	..	..	..	..	..
Evening Classes...	120	..	..	..	..	..
Workers' Educational Association	50	..	..	..	..	..
College of Optometry of Canada.....	43	..	..	..	..	..
Totals.....	1,351	193	34	29	189	82

Number of students registered—1,603

Department of Sociology

	Lecture Courses
	1 or 2 or 3 hours
	Honour
Faculty of Arts—	
Second Year	14
Third Year	24
Fourth Year	14
Department of Social Science—	
First Year	21
Second Year	30
School of Graduate Studies	7
Total	110

Number of students registered—110

(*f*) Registration in Courses in the Faculty of Arts

Courses	First Year								Second Year								Third Year								Fourth Year								Totals
	U C		V C		T C		M C		U C		V C		T C		M C		U C		V C		T C		M C		U C		V C		T C		M C		
Pass	118		117		59		105		125		93		48		66		114		88		47		70		..		..		..		..		1,050
General	..		..		..		..		..		..		..		..		9		13		6		3		20		18		3		3		75
Classics	3		..		2		..		1		1		..		1		1		4		..		1		3		2		3		1		23
English Language and Literature	21		20		8		7		10		10		6		3		15		13		2		3		8		9		1		1		137
Greek and Hebrew	1		..		..		..		..		..		..		..		..		..		..		..		..		1		..		..		2
Hebrew and Ancient History	..		..		..		..		..		1		..		..		..		..		..		..		..		..		..		..		1
Latin (French or Greek Option) Div. I	..		4		1		1		..		3		..		4		1		2		1		2		1		1		..		5		28
Latin (French or Greek Option) Div II									..		..		..		..		..		..		1		1		..		..		..		..		
Modern Languages	20		20		2		3		15		12		9		2		18		8		2		1		11		15		2		3		143
Oriental Languages	..		..		..		..		2		..		..		..		3		1		..		..		..		2		..		..		8
Fine Art	7		4		1		1		2		2		2		..		5		..		..		1		3		2		1		..		31
Law	13		9		5		..		4		4		1		..		22		3		..		..		12		5		6		1		85
Social and Philosophical Studies	36		35		22		5		..		..		..		..		..		..		..		..		..		..		..		..		98
Modern History	..		..		..		..		10		13		5		..		13		5		3		..		9		5		6		..		69
Music	2		5		1		1		3		3		2		..		..		4		..		1		..		..		..		..		22
Philosophy	..		..		..		..		3		2		2		4		3		..		1		3		2		1		..		1		22
Philosophy (English or History Option)	5		4		..		3		1		4		2		..		2		4		1		4		..		1		4		1		36
Political Science and Economics	..		..		..		..		7		6		3		..		9		3		3		..		7		6		8		1		53
Psychology	..		..		..		..		7		..		2		..		6		1		2		..		9		2		..		..		29
Sociology	..		..		..		..		6		6		2		..		6		5		1		..		5		6		2		..		39
Mathematics and Physics (Div. I)																									1		3		1		..		
Mathematics and Physics (Div. II)																	5		4		1		..		2		1		1		..		
Mathematics and Physics (Div. III)	23		11		7		4		7		10		1		2										1		..		..		..		107
Mathematics and Physics (Div. IV)																	8		5		..		1		2		4		1		..		
Mathematics and Physics (Div. V)																									1		..		..		..		
Physics and Chemistry	..		..		..		..		4		3		1		..		4		..		..		1		1		2		..		..		16
Physics and Geology	..		..		..		..		2		1		2		..		..		..		..		..		..		..		..		..		5
Science	23		13		5		3		..		..		..		..		..		..		..		..		..		..		..		..		44
Biological and Medical Sciences	..		..		..		..		2		3		1		2		3		3		1		..		5		2		2		..		24
Biology	..		..		..		..		2		5		3		..		3		1		..		..		1		2		..		..		17
Biology and Physics	..		..		..		..		..		..		..		..		1		1		..		..		1		..		..		..		3
Chemistry	..		..		..		..		3		4		3		2		6		1		2		3		1		4		..		1		30
Chemistry, Mineralogy and Geology, Div. I	..		..		..		..		7		2		..		..		3		3		..		..		..		2		..		..		22
Chemistry, Mineralogy and Geology, Div. II	..		..		..		..										1		..		..		..		2		2		..		..		
Food Chemistry	..		..		..		..		1		..		..		..		..		..		..		..		..		..		..		..		1
Geology and Mineralogy	..		..		..		..		..		3		..		1		1		1		1		..		2		2		..		..		11
Household Economics	24		22		5		5		35		17		9		2		20		14		3		..		9		13		1		..		179
Physiology and Biochemistry	..		..		..		..		6		3		1		..		..		4		..		..		1		..		..		..		15
Commerce and Finance	22		28		21		3		33		28		14		5		21		15		9		2		16		10		5		..		232
Exchange Students	..		..		..		..		3		1		..		..		..		..		..		..		..		..		..		..		..		4
Registered twice	..		..		..		..		..		..		..		..		..		..		..		..		..		1		..		..		1
Totals	318		292		139		141		301		240		119		94		303		206		87		97		136		122		47		18		2,660

(g) Registration in Courses in the School of Graduate Studies

Department	Ph.D.	M.A.	M. Com.	M.S.	M.A. Sc.	C.E.	E.E.	D. Paed.	Mus. Doc.	M.Sc. (Dent.)	M.S.A.	D.V. Sc.	Grad. Stud.
Anatomy	1	..	..	..	..	..	..	..	..	..	..	..	..
Anthropology	1	..	..	..	..	..	..	..	..	..	..	..	2
Applied Mathematics	1	1	..	..	..	..	..	..	..	..	..	..	..
Astronomy	..	1	..	..	..	..	..	..	..	..	..	..	..
Biochemistry	7	3	..	..	..	..	..	..	..	..	3	..	3
Biology	16	7	..	..	..	..	..	..	..	..	4	..	1
Botany	12	6	..	..	..	..	..	..	..	..	2	..	1
Chemistry	17	17	..	..	..	..	..	..	..	..	8	..	3
Chemical Engineering	..	..	..	..	5	..	..	..	..	..	..	..	3
Chinese Archaeology	..	..	..	..	..	..	..	..	..	..	..	..	2
Civil Engineering	..	..	..	..	1	..	..	..	..	..	..	..	..
Classics	6	5	..	..	..	..	..	..	..	..	..	..	2
Dentistry	..	..	..	..	..	..	..	..	..	1	..	..	..
Educational Theory	..	..	..	..	..	..	..	..	..	..	..	..	1
Electrical Engineering	..	..	..	..	2	..	..	..	..	..	..	..	..
English	3	24	..	..	..	..	..	..	..	..	..	..	17
Food Chemistry	..	2	..	..	..	..	..	..	..	..	..	..	..
Geography	..	2	..	..	..	..	..	..	..	..	..	..	2
Geology and Palaeontology	8	3	..	..	..	..	..	..	..	..	..	..	6
Germanic Languages	..	8	..	..	..	..	..	..	..	..	..	..	..
History	5	12	..	..	..	..	..	..	..	..	..	..	4
Household Science	..	5	..	..	..	..	..	..	..	..	..	..	..
Hygiene and Preventive Medicine	..	2	..	..	..	..	..	..	..	..	3	..	1
Law	1	1	..	..	..	..	..	..	..	..	..	..	1
Mathematics	2	8	..	..	..	..	..	..	..	..	..	..	3
Mechanical Engineering	2	..	..	..	1	..	..	..	..	..	..	..	..
Metallurgical Engineering	..	..	..	..	2	..	..	..	..	..	..	..	..
Mineralogy	2	..	..	..	..	..	..	..	..	..	..	..	..
Mining Engineering	..	..	..	..	1	..	..	..	..	..	..	..	..
Music	..	..	..	..	..	..	..	..	3	..	..	..	..
Pathological Chemistry	4	..	..	..	..	..	..	..	..	..	..	..	..
Pedagogy	..	..	..	..	..	..	..	41	..	..	..	..	..
Pharmacology	2	..	..	..	..	..	..	..	..	..	..	..	..
Philosophy	21	22	..	..	..	..	..	..	..	..	..	..	6
Physics	11	22	..	..	..	..	..	..	..	..	..	..	2
Physiology	2	5	..	..	..	..	..	..	..	..	..	..	2
Physiological Hygiene	..	2	..	..	..	..	..	..	..	..	..	..	..
Political Science	2	6	3	..	..	..	..	..	..	..	1	..	17
Professional Degrees	..	..	..	..	..	1	1	..	..	..	..	..	..
Psychology	6	11	..	..	..	..	..	..	..	..	..	..	8
Romance Languages	5	3	..	..	..	..	..	..	..	..	..	..	12
Semitic Languages	1	3	..	..	..	..	..	..	..	..	..	..	1
Surgery	..	..	..	5	..	..	..	..	..	..	..	..	..
Veterinary Science	..	..	..	..	..	..	..	..	..	..	..	2	..
Special Committees	2	5	..	..	2	..	..	..	..	..	6	..	4
Totals	140	186	3	5	14	1	1	41	3	1	27	2	104

(*h*) Results of the Annual Examinations

Faculty of Arts

First Year

Course	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Conditioned	Failed	Transferred	Aegrotat	Debarred
Pass	..	116	116	58	98	388	224	78	86	..	5	39
Supplementals	..	21	12	5	9	47	40	7	..	..	..	..
Classics	..	3	..	2	..	5	5	..	..	..	..	..
English Language and Literature	..	21	20	8	6	55	45	9	1	9	1	..
Greek and Hebrew	..	1	..	..	..	1	1	..	..	..	..	..
Latin (French or Greek Option)	..	..	4	1	1	6	5	..	1	..	..	..
Modern Languages	..	20	20	2	3	45	41	4	..	7	3	1
Fine Art	..	7	4	1	1	13	9	4	..	1	1	2
Law	..	12	9	5	..	26	24	2	..	2	1	3
Social and Philosophical Studies	..	36	34	21	5	96	70	20	6	12	2	5
Philosophy (English or History Option)	..	5	4	..	3	12	7	3	2	1	1	..
Mathematics and Physics	..	23	10	6	4	43	32	5	6	2	..	1
Science	..	22	12	5	3	42	32	9	1	5	1	2
Household Economics	..	24	22	5	5	56	43	13	..	7	..	1
Commerce and Finance	..	21	27	21	3	72	56	11	5	3	..	3
Occasional Students	5	4	4	2	..	15	11	4	..	..	..	..
Totals	5	336	298	142	141	922	645	169	108	49	15	57

Second Year

Course	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Conditioned	Failed	Aegrotat	Debarred	Active Service
Pass	..	122	92	48	65	327	224	65	38	2	14	..
Supplementals	..	15	12	10	11	48	42	6	..	..	..	..
Classics	..	1	1	..	1	3	3	..	..	..	..	..
English Language and Literature	..	10	10	5	3	28	25	..	3	1	..	..
Latin (French or Greek Option) Div. I.	..	..	3	..	4	7	5	..	2	..	..	..
Modern Languages	..	15	12	9	2	38	26	2	10	..	..	..
Oriental Languages	..	2	..	..	..	2	2	..	..	..	..	..
Fine Art	..	2	2	2	..	6	6	..	..	1	..	..
Law	..	4	4	1	..	9	8	..	1	1	..	..
Modern History	..	9	13	5	..	27	24	1	2	..	..	..
Music	..	3	3	2	..	8	7	1	..	1	..	..
Philosophy	..	2	2	2	3	9	9	..	..	..	..	..
Philosophy (English or History Option)	..	1	4	2	..	7	7	..	..	..	..	..
Political Science and Economics	..	6	6	3	..	15	11	1	3	..	..	..
Psychology	..	7	..	2	..	9	6	..	3	..	..	..
Sociology	..	6	6	2	..	14	14	..	..	..	..	..
Mathematics and Physics	..	7	10	1	2	20	13	2	5	..	..	..
Physics and Chemistry	..	4	3	1	..	8	6	2	..	..	..	1
Physics and Geology	..	2	1	2	..	5	2	2	1	..	..	..
Biological and Medical Sciences	..	2	3	1	2	8	6	1	1	..	..	..
Biology	..	2	5	3	..	10	3	4	3	..	2	..
Chemistry	..	3	3	3	2	11	6	1	4	..	..	..
Chemistry, Mineralogy and Geology	..	7	2	..	..	9	6	1	2	..	..	..
Food Chemistry	..	1	..	..	..	1	..	1	..	..	..	..
Geology and Mineralogy	..	..	3	..	1	4	2	1	1	1	1	..
Household Economics	..	35	17	9	2	63	43	11	9	1	1	..
Physiology and Biochemistry	..	6	3	1	..	10	4	1	5	..	1	..
Commerce and Finance	..	33	28	13	5	79	55	6	18	3	1	..
Occasional Students	1	..	..	..	1	2	2	..	..	..	..	..
Totals	1	307	248	127	104	787	567	109	111	11	20	1

Third Year

Course	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Conditioned	Failed	Aegrotat	Debarred	Active Service
Pass	..	114	86	51	71	322	266	44	12	..	..	3
Supplementals	..	4	4	5	3	16	13	3	..	..	..	..
General	..	9	13	5	3	30	30	..	..	2	..	..
Classics	..	1	4	..	1	6	5	..	1	..	..	..
English Language and Literature	..	15	13	2	3	33	31	..	2	..	..	..
Latin (French or Greek Option), Div. I	..	1	2	1	2	6	6	..	..	..	..	..
Latin (French or Greek Option), Div. II	..	..	..	1	1	2	2	..	..	..	..	..
Modern Languages	..	18	8	2	1	29	27	..	2	1	..	..
Oriental Languages	..	3	1	..	..	4	3	1	..	..	..	..
Fine Art	..	5	..	..	1	6	6	..	..	..	1	..
Law	..	21	3	..	..	24	20	4	..	..	..	..
Modern History	..	13	5	3	..	21	21	..	..	..	1	..
Music	..	..	4	..	1	5	5	..	..	..	..	..
Philosophy	..	3	..	1	3	7	6	1	..	..	..	..
Philosophy (English or History Option)	..	2	4	1	4	11	10	1	..	..	1	..
Political Science and Economics	..	9	3	3	..	15	14	1	..	..	..	..
Psychology	..	6	1	2	..	9	8	1	..	1	..	..
Sociology	..	5	5	1	..	11	10	1	..	1	..	..
Mathematics and Physics, Divs. I & II	..	5	4	1	..	10	8	..	2	..	..	..
Mathematics and Physics, Divs. III & IV	..	8	5	..	1	14	13	..	1	..	1	..
Physics and Chemistry	..	4	..	..	1	5	4	..	1	..	..	..
Biological and Medical Sciences	..	3	3	1	..	7	6	1	..	..	..	..
Biology	..	3	1	..	..	4	4	..	..	..	..	..
Biology and Physics	..	1	1	..	..	2	1	..	1	..	..	..
Chemistry	..	6	1	2	3	12	9	2	1	..	..	..
Chemistry, Mineralogy and Geology, Div. I	..	3	3	..	..	6	3	2	1	..	..	..
Chemistry, Mineralogy and Geology, Div. II	..	1	..	..	..	1	1	..	..	..	..	..
Geology and Mineralogy	..	1	1	1	..	3	3	..	..	..	..	..
Household Economics	..	20	14	3	..	37	28	8	1	1	1	..
Physiology and Biochemistry	..	..	4	..	..	4	4	..	..	..	1	..
Commerce and Finance	..	21	15	9	2	47	39	1	7	1	1	..
Occasional Students	1	3	1	..	..	5	4	..	1	..	..	..
Totals	1	308	209	95	101	714	610	71	33	7	7	3

Fourth Year

Course	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Conditioned	Failed	Aegrotat	Degree without Honours	Active Service
General	..	20	18	3	3	44	42	..	2	1	..	..
Classics	..	3	2	3	1	9	9	..	..	..	1	..
English Language and Literature	..	8	9	1	1	19	19	..	..	..	..	..
Latin (French or Greek Option), Div. I	..	1	1	..	5	7	7	..	..	..	..	..
Modern Languages	..	11	15	2	3	31	31	..	..	..	..	..
Oriental Languages	..	..	2	..	..	2	2	..	..	..	..	..
Fine Art	..	3	2	1	..	6	6	..	..	..	..	..
Law	..	12	5	6	1	24	24	..	..	..	1	..
Modern History	..	9	5	6	..	20	20	..	..	1	..	2
Philosophy	..	2	1	..	1	4	4	..	..	..	..	..
Philosophy (English or History Option)	..	..	1	4	1	6	6	..	..	..	..	..
Political Science and Economics	..	7	6	8	1	22	22	..	..	1	1	..
Psychology	..	9	2	..	..	11	11	..	..	..	..	..
Sociology	..	5	6	2	..	13	13	..	..	1	..	..
Mathematics and Physics, Div. I	..	1	3	1	..	5	5	..	..	..	2	..
Mathematics and Physics, Div. II	..	2	1	1	..	4	3	..	1	..	1	..
Mathematics and Physics, Div. III	..	1	..	..	..	1	1	..	..	..	..	..
Mathematics and Physics, Div. IV	..	2	4	1	..	7	7	..	..	..	..	2
Mathematics and Physics, Div. V	..	1	..	..	..	1	1	..	..	..	..	..
Physics and Chemistry	..	1	2	..	..	3	3	..	..	..	..	..
Biological and Medical Sciences	..	5	2	2	..	9	9	..	..	..	1	..
Biology	..	1	2	..	..	3	3	..	..	..	..	..
Biology and Physics	..	1	..	..	..	1	1	..	..	..	..	..
Chemistry	..	1	4	..	1	6	6	..	..	..	..	..
Chemistry, Mineralogy and Geology, Div. I	..	..	2	..	..	2	2	..	..	..	..	..
Chemistry, Mineralogy and Geology, Div. II	..	2	2	..	..	4	4	..	..	..	..	..
Geology and Mineralogy	..	2	2	..	..	4	4	..	..	..	..	..
Household Economics	..	9	13	1	..	23	23	..	..	..	..	..
Physiology and Biochemistry	..	1	..	..	..	1	1	..	..	..	..	..
Commerce and Finance	..	16	10	5	..	31	31	..	..	1	..	..
Occasional Students	2	..	..	..	..	2	2	..	..	..	..	..
Totals	2	136	122	47	18	325	322	..	3	5	7	4

Pass Course for Teachers

	Passed	Conditioned	Total
August Examination	284	45	329
May Examination	358	103	461
Totals	642	148	790

Faculty of Medicine

	Passed	Conditioned	Failed
First Year	87	6	51
Second Year	82	12	18
Third Year	72	25	10
Fourth Year	93	19	4
Fifth Year	113	21	1
Sixth Year	126	5	1
Candidate for Degree of B.Sc. (Med.)	1	..	..
Candidates for Diploma in Public Health	20	..	..
Candidate for Diploma in Radiology	1	..	..
Candidates for Diploma in Psychiatry	6	..	..
Totals	601	88	85

Faculty of Applied Science and Engineering

	Passed with Honours	Passed	Conditioned	Failed
First Year—				
Civil Engineering	3	18	5	10
Mining Engineering	4	10	13	4
Mechanical Engineering	8	16	19	12
Architecture	1	3	4	..
Engineering Physics	7	4	6	1
Chemical Engineering	13	20	29	25
Electrical Engineering	9	18	14	16
Metallurgical Engineering	3	11	8	3
Mining Geology	..	1	2	..
Second Year—				
Civil Engineering	4	4	7	2
Mining Engineering	4	10	3	2
Mechanical Engineering	8	17	19	16
Architecture	3	7	2	..
Engineering Physics	8	3	1	6
Chemical Engineering	11	16	14	8
Electrical Engineering	4	15	7	2
Metallurgical Engineering	..	12	11	..
Mining Geology	1	2	1	1
Third Year—				
Civil Engineering	3	10	9	3
Mining Engineering	5	9	10	2
Mechanical Engineering	6	26	6	1
Architecture	2	..	..	..
Engineering Physics	4	4	1	1
Chemical Engineering	6	12	20	..
Electrical Engineering	6	20	4	1
Metallurgical Engineering	9	3	2	1
Mining Geology	3	1	3	..
Fourth Year—				
Civil Engineering	2	6	2	1
Mining Engineering	14	23	1	..
Mechanical Engineering	6	17	7	..
Architecture	2	2	..	..
Engineering Physics	7	1	1	..
Chemical Engineering	14	28	1	1
Electrical Engineering	7	16	6	..
Metallurgical Engineering	7	16	5	1
Mining Geology	1	..	1	..
Fifth Year—				
Architecture	1	..	..	..
Totals	196	381	244	120

Faculty of Household Science

	Passed	Conditioned	Failed
First Year	2	3	1
Second Year	4	2	1
Third Year	14	3	4
Fourth Year	9	2	..
Occasional Students	1	2	..
Supplementals	4	..	..
Totals	34	12	6

Ontario College of Education

	Passed	Failed
*High School Assistants' Course	270	..
Specialists' Courses	134	..
First Class Public School Course	28	..
Elementary Art Course	37	..
Elementary Commercial Course	23	..
Educational Counselling Course	11	..
Elementary Home Economics Course	13	..
Elementary Music Course	34	..
Elementary Physical Education Course	80	..
Elementary Shop Work Course	7	..
Intermediate Art Course	15	..
Intermediate Home Economics Course	17	..
Intermediate Music Course	15	..
Intermediate Physical Education Course	35	..
Librarians' Course—		
Candidates for Degree of B.L.S.	43	..
Candidates for Diploma	9	..
Bachelor of Pedagogy Course—		
Candidates for Degree of B.Paed.	50	..
Passed in part	98	..
Number who failed in whole or part	..	89
Totals	919	89

*Many of these are included among those who passed or failed in the other courses in this list.

Faculty of Forestry

	Passed	Conditioned	Failed
First Year	11	3	5
Second Year	11	2	..
Third Year	1	..	1
Fourth Year	5	2	..
Totals	28	7	6

Faculty of Music

	Passed	Conditioned	Failed
First Year	7	3	1
Second Year	13	5	5
Third Year	7	14	6
Totals	27	22	12

Faculty of Dentistry

	Passed	Conditioned	Failed
First Year	28	10	..
Second Year	42	11	5
Third Year	32	12	..
Fourth Year	40	6	..
Fifth Year	56	..	..
Occasional Student	1	..	..
Dental Nurses	15	2	..
Totals	214	41	5

Departments

The numbers examined in the different departments of the University, including those persons granted standing for military service, were as follows:

Arts:		
Fourth Year	325	
Third Year	714	
Second Year	787	
First Year	922	
Pass Course for Teachers	790	
Graduates (Specialist Standing)	37	
		3,575
Medicine:		
Sixth Year	132	
Fifth Year	135	
Fourth Year	116	
Third Year	107	
Second Year	112	
First Year	144	
Candidate for Degree of B.Sc. (Med.)	1	
Candidates for Diploma in Public Health	20	
Candidate for Diploma in Radiology	1	
Candidates for Diploma in Psychiatry	6	
		774
Applied Science and Engineering:		
Fifth Year	1	
Fourth Year	196	
Third Year	193	
Second Year	231	
First Year	320	
		941
Household Science		49
Education		712
Forestry		41
Music		61
Graduate Studies		450
Dentistry		260
Social Science		83
School of Nursing		223
Physical Education for Women		27
University Extension:		
Occupational Therapy		76
Physiotherapy		63
Aerial Navigation		54
Law		14
Pharmacy		226
Agriculture		118
Veterinary Science		62
Local Examinations in Music		13,569

(*i*) Admission to Degrees

	Men	Women	Totals
Ph.D	32	1	33
M.A	91	27	118
M.Com	1	..	1
M.S	1	..	1
M.A.Sc	9	..	9
C.E	1	..	1
E.E	1	..	1
D.Paed	3	..	3
Mus.Doc	2	..	2
M.S.A	2	..	2
B.A	336	298	634
B.Com	31	2	33
M.D	137	8	145
B.Sc. (Med.)	2	..	2
B.A.Sc	164	..	164
B.Arch	3	..	3
B.H.Sc	...	21	21
B.Paed	44	6	50
B.L.S	..	60	60
B.Sc.F	5	..	5
Mus. Bac	4	3	7
D.D.S	54	..	54
LL.B	6	..	6
B.S.A	114	1	115
B.V.Sc	59	..	59
Phm.B	91	8	99
Totals	1,193	435	1,628

(*j*) Admission to Diplomas and Certificates

	Men	Women	Totals
Aerial Navigation	14	..	14
Dental Nursing	..	15	15
Librarianship	2	7	9
Occupational Therapy	..	30	30
Physical Education	..	2	2
Physiotherapy	..	21	21
Psychiatry	11	2	13
Public Health	15	..	15
Public Health Nursing	..	180	180
Radiology	1	..	1
Social Science	5	27	32
Totals	48	284	332

(*k*) Geographical Distribution of Students

FACULTY OF ARTS

	University of Toronto	University College	Victoria College	Trinity College	St. Michael's College	Totals
Ontario: (1) Province	391	417	332	130	100	1,370
(2) Toronto	518	603	506	244	135	2,006
Nova Scotia	4	1	1	..	..	6
New Brunswick	1	2	1	4	..	8
Prince Edward Island	..	..	1	..	..	1
Quebec	4	2	4	..	2	12
Manitoba	8	6	1	..	..	15
Saskatchewan	7	18	5	2	4	36
Alberta	9	6	4	3	6	28
British Columbia	4	7	1	2	3	17
United States	5	10	4	..	101	120
Elsewhere	..	7	9	11	2	29
Totals	951	1,079	869	396	353	3,648

THE UNIVERSITY

	Faculty of Arts	Faculty of Medicine	Faculty of Applied Science and Engineering	Faculty of Household Science	Ontario College of Education	Faculty of Forestry	Faculty of Music	School of Graduate Studies	Faculty of Dentistry	Department of Social Science	School of Nursing	Physical Education for Women	Occupational Therapy	Physiotherapy	Aerial Navigation	Registered Twice	TOTALS
Ontario:																	
(1) Province	1,370	281	370	31	521	20	18	149	104	26	205	5	29	22	21	11	3,161
(2) Toronto	2,006	421	543	12	236	19	24	215	91	35	119	21	26	25	25	32	3,786
Nova Scotia	6	3	..	..	20	..	..	16	..	..	3	..	..	..	1	..	49
New Brunswick	8	7	2	..	4	..	..	15	2	2	4	..	..	..	..	..	44
Prince Edward Island	1	2	1	..	1	..	..	..	..	..	4	..	..	..	..	..	9
Quebec	12	9	3	..	5	1	1	6	..	..	2	..	1	1	1	..	42
Manitoba	15	1	6	..	6	..	..	19	15	11	5	..	2	1	..	..	81
Saskatchewan	36	38	12	2	9	..	3	21	21	7	11	1	1	5	..	1	166
Alberta	28	11	8	2	2	..	1	14	4	6	9	..	1	1	1	..	88
British Columbia	17	24	2	3	11	..	1	20	5	3	4	..	1	1	..	..	92
United States	120	1	4	..	4	..	2	33	2	..	2	..	1	..	..	2	167
Elsewhere	29	19	10	..	3	2	..	20	21	1	18	..	1	2	1	1	126
Totals	3,648	817	961	50	822	42	50	528	265	91	386	27	63	58	50	47	7,811

THE PROVINCE OF ONTARIO

	Faculty of Arts	Faculty of Medicine	Faculty of Applied Science and Engineering	Faculty of Household Science	Ontario College of Education	Faculty of Forestry	Faculty of Music	School of Graduate Studies	Faculty of Dentistry	Department of Social Science	School of Nursing	Physical Education for Women	Occupational Therapy	Physiotherapy	Aerial Navigation	Registered Twice	TOTALS
Algoma	18	8	3	..	3	..	..	1	4	1	5	..	..	2	..	..	45
Brant	28	7	8	..	11	1	1	3	..	1	5	..	1	1	..	..	67
Bruce	24	1	..	..	4	..	..	1	2	..	1	..	1	..	..	..	34
Carleton	71	13	11	2	48	1	..	9	7	4	11	1	..	1	1	2	178
Cochrane	18	6	11	..	5	..	..	1	2	..	..	..	2	1	..	..	46
Dufferin	9	2	5	..	5	1	1	1	..	..	8	..	1	..	..	..	33
Dundas	5	..	2	..	1	..	..	1	..	..	..	..	..	..	1	..	10
Durham	22	1	2	..	3	..	..	3	1	..	3	..	..	..	1	..	36
Elgin	11	2	8	..	17	..	2	..	..	1	1	..	..	..	..	..	42
Essex	53	11	18	1	24	..	..	12	8	..	3	..	1	2	2	..	135
Frontenac	5	1	..	2	15	..	..	1	1	1	2	..	..	1	..	..	29
Glengarry	3	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	5
Grenville	10	1	..	..	6	..	..	1	..	..	..	..	1	..	..	..	19
Grey	34	6	13	1	16	2	..	1	5	..	2	..	..	2	1	..	83
Haldimand	8	2	2	1	5	..	..	3	..	..	2	..	..	..	..	..	23
Haliburton	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
Halton	31	5	10	1	3	..	..	..	2	1	6	..	..	1	1	..	61
Hastings	17	6	2	..	6	1	..	2	2	..	2	..	..	..	..	..	38
Huron	16	1	4	1	16	1	..	3	..	..	3	1	..	..	1	1	46
Kenora	3	4	3	..	1	..	..	..	2	..	1	..	..	..	..	..	14
Kent	8	4	10	..	3	..	1	2	1	..	8	..	..	..	..	..	37
Lambton	30	3	5	..	12	1	1	..	4	..	2	..	..	..	..	..	58
Lanark	13	2	2	1	8	..	..	1	2	2	1	..	..	..	..	..	32
Leeds	18	..	1	1	5	..	..	1	3	2	5	..	1	..	..	1	36
Lennox and Addington	5	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	7
Lincoln	36	6	25	4	10	..	1	5	3	1	5	..	1	1	..	..	98
Manitoulin	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	3
Middlesex	23	7	9	2	37	1	..	7	2	2	9	..	1	..	3	..	103
Muskoka	14	1	5	3	3	..	..	2	1	1	1	..	1	..	..	1	31
Nipissing	19	16	9	..	12	1	..	..	7	..	7	..	1	..	..	..	72
Norfolk	12	1	2	..	2	..	..	2	2	..	..	..	..	..	..	..	21
Northumberland	12	7	5	..	2	1	1	3	2	..	8	..	..	..	1	..	42
Ontario	42	8	5	..	11	1	1	3	2	..	7	..	..	..	1	..	81
Oxford	22	9	7	1	8	1	1	4	1	2	5	..	1	..	..	1	61
Parry Sound	14	..	2	..	4	..	..	2	2	..	..	..	..	..	..	..	24
Peel	57	3	19	2	3	..	1	2	1	1	5	2	..	..	1	2	95
Perth	37	5	5	1	17	1	..	3	..	..	2	..	1	..	..	..	72
Peterborough	39	4	4	..	6	..	1	2	1	..	4	..	..	2	..	..	63
Prescott	1	1	..	..	3	..	..	..	..	..	..	..	..	..	..	..	5
Prince Edward	2	1	1	..	3	..	..	..	..	..	..	..	..	..	..	..	7
Rainy River	4	4	..	..	..	..	..	2	1	..	..	..	..	..	..	..	11
Renfrew	16	2	2	..	5	..	..	1	1	..	4	..	..	..	1	..	32
Russell	2	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	4
Simcoe	75	18	17	1	11	2	2	7	7	..	13	..	2	..	1	..	156
Stormont	9	..	1	..	2	..	..	..	..	..	4	..	..	..	..	..	16
Sudbury	18	..	2	..	3	..	..	3	1	..	..	..	..	..	..	..	27
Thunder Bay	31	10	13	..	10	..	1	2	2	..	2	..	1	3	..	..	75
Timiskaming	12	3	7	..	3	1	..	2	..	..	8	..	..	..	..	..	36
Victoria	23	3	2	..	6	..	..	1	2	..	2	..	..	1	..	..	40
Waterloo	45	9	9	2	20	..	1	3	2	1	12	..	..	2	..	..	106
Welland	44	14	15	..	16	..	..	6	6	..	5	..	2	..	1	1	108
Wellington	45	11	12	1	15	..	2	13	1	..	1	..	..	..	..	..	101
Wentworth	73	23	30	..	65	..	..	13	8	5	13	..	5	..	..	..	235
York	178	29	41	2	24	3	..	13	3	..	17	1	4	2	4	2	319
Toronto	2,006	421	543	12	236	19	24	215	91	35	119	21	26	25	25	32	3,786
Totals	3,376	702	913	43	757	39	42	364	195	61	324	26	55	47	46	43	6,947

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